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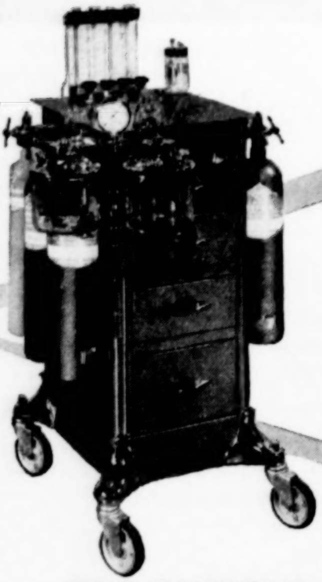

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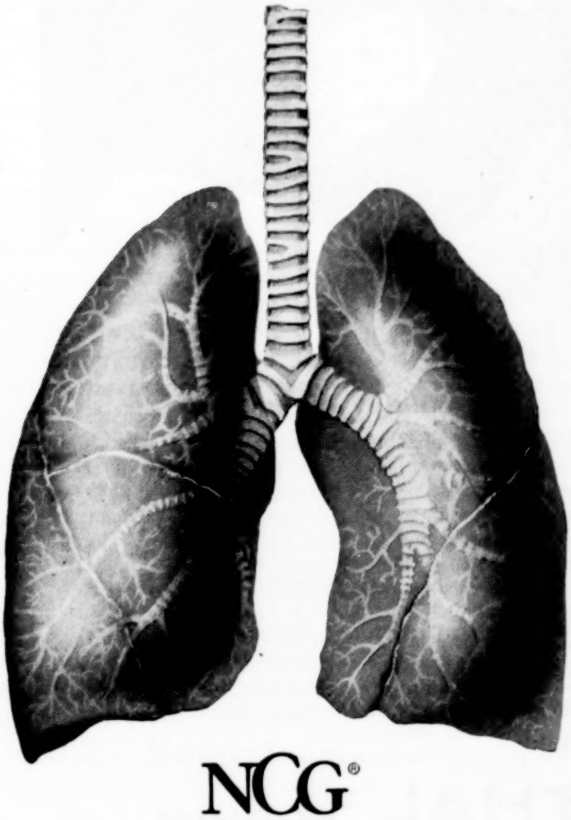

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[1] Whyte, D. W., "Special Indications for Rectal Pentothal in Children", *Canad. Med. J.*, 64:525, June, 1951

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Our 25th Anniversary

Minnie V. Haas, R.N. *
Fort Worth, Texas

In reviewing the activities of the American Association of Nurse Anesthetists over the past 25 years, we cannot fail to acknowledge the successes achieved by the leaders of our organization in attaining the goals originally created at the first convention held in 1933. Every project carried forward during the past 25 years has successfully encompassed the detailed objectives established for our Association.

The office of the presidency in any organization symbolizes the accomplishments of all its members, and recognizing this, the AANA in September, 1952, presented to each of its past presidents, a specially designed pin, honoring those women who so admirably fulfilled the duties of their office. Attending the annual banquet that year were all of our past presidents except our founder, the late Agatha Hodgins. On that memorable occasion the Lakeside Alumni Association presented a portrait of Miss Hodgins to the AANA. Acknowledging their contributions to the Association's progress we mention here the names of our past presidents and the dates of their office:

Minnie V. Haas

Agatha C. Hodgins	*1931-1933*
Gertrude L. Fife	*1933-1935*
Hilda Salomon	*1935-1937*
Miriam G. Shupp	*1937-1940*
Helen Lamb (Powell)	*1940-1942*
Rosalie McDonald	*1942-1944*
Hazel Blanchard	*1944-1946*
Lucy Richards	*1946-1948*
Myra Van Arsdale	*1948-1950*
Verna E. Bean	*1950-1952*
Josephine B. Bunch	*1952-1954*

We wish to pay tribute, also, to the more than 50 members who have served on the Board of Trustees, supporting the presidents.

The American Association of Nurse Anesthetists was founded on June 17, 1931 by Agatha Hodgins in Cleveland, Ohio, and on March 12, 1932, the Association was incorporated in that State. In 1939, the Association was incorporated in the State of Illinois with National Headquarters transferred from Cleveland to Chicago.

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*President of the AANA; Chief, Department of Anesthesia, St. Joseph's Hospital Fort Worth, Texas.

Presented at The Carolinas-Virginias Assembly, Roanoke, Virginia, April 10, 1956.

THE NURSE ANESTHETIST

Long before formal organization was dreamed of, nurses were administering anesthesia. Although a popular concept consists of the belief that the first trained nurse anesthetists worked for the Doctors Mayo in Rochester, Minnesota, research in connection with the work, "History Of Anesthesia" by Virginia Thatcher[1] reveals that as early as 1886, Sister Secundina Mindrup of the Third Order of the Hospital Sisters of St. Francis was taught by surgeons to administer chloroform and ether. Other women had been administering anesthesia prior to that time, but it is believed that Sister Secundina is the first trained nurse who specialized in the administration of anesthesia.

During the last quarter of the 19th Century surgery made its greatest advances, and as surgery became more prevalent so, too, did the work of nurse anesthetists increase.

It was more than fifty years, however, from the time Sister Secundina received her training that a group of anesthetists met in Cleveland, Ohio for the purpose of establishing a national association of nurse anesthetists. Alumnae groups and some state groups had met prior to that time, but it was the enthusiastic promotion of the idea by Agatha Hodgins that brought her graduates and others to Cleveland on June 17, 1931.

As the Association grew, its activities increased, and it soon became apparent that full-time personnel were needed to handle the business affairs of the Association. It was decided to transfer the Executive Offices to Chicago for the purpose of more centrally locating National Headquarters in the country.

STATE AFFILIATIONS

Concurrent with the organizing of the National Association were applications for the affiliation of Alabama, Ohio and Pennsylvania, and this year these three states are also celebrating their silver jubilees.

In the succeeding 24 years, 36 other state associations were formed and affiliated with the AANA. Prior to the close of 1956 it is expected that several more states will complete their organizational plans and join the parent group.

CODE OF ETHICS

The formulation of the Code of Ethics outlining the ethical and professional conduct of our members fulfilled one of our earliest and most important projects. This Code, described by persons outside of our profession as "refreshing in its high standard in comparison to the selfishness that seems to be encroaching upon some professional groups" is our constant reminder of the goal to which we have dedicated ourselves.

An earlier development, the outline of personnel policies, was and still is another meaningful guide for every individual in the Association. Calling attention as it does to the special problems of employment inherent in anesthesia service, copies of the personnel policies are of inestimable value to members and their employers in discussions of employment adjustments.

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[1] History Of Anesthesia, Virginia Thatcher; J. B. Lippincott Co., 1953.

Government Relations And Legal Counsel

Constantly alert to the best interests of its members, the Association has maintained an active Government Relations Committee which studies existing laws and maintains a vigilant observation of pending legislation. Full time legal counsel is retained for guiding the Association through some of the more intricate problems that present themselves.

Publications

From the date of the first publication of papers presented at the first annual meeting in 1933, the Journal, formerly known as the Bulletin of the AANA, has presented to members highly informative articles dealing with the rapid advances of anesthesia. This material on clinical anesthesia has been and continues to be supplied to the editors of the Journal by state and regional groups which select the best of the material presented at meetings the country over.

In 1947, realizing that members were also keenly interested in association news not necessarily of clinical nature, a news bulletin was inaugurated. Today the Bulletin ranks equally in popularity with the Journal. Through the Bulletin all members nationwide share in the experiences of the individual, the state, and regional group activities by regularly submitted contributions from the individual and affiliated organizations.

Issued quarterly, both the Journal and the Bulletin are published exclusively by and for the members of the Association.

Publicity And Recruitment

One of the most active projects of the Association is that of publicity and recruitment. It has been the policy of the Association from its inception not to become involved in controversial issues concerning the question of who is to administer anesthesia. It has been the firm conviction of Association Officers, amply supported by members throughout the Association, that the nurse anesthetist has won recognition in the more than 80 years of magnificent services rendered in the field of anesthesia.

Increasing demands for information about the Nurse Anesthetist has resulted in an almost unbelievable amount of recruitment material being distributed to schools, guidance counselors, career day meetings and nursing schools. During the past year alone the Association has distributed more than 40,000 pamphlets all on direct request. Members have cooperated with career day leaders, with high school and nursing school counselors in presenting the story of this specialty to persons seeking a career.

In maintaining professional integrity, it is our conviction that by dealing through recruitment groups and Association publicity through the press, we gain greater long range value than overt participation in controversial issues would afford us.

Our Public Relations Committees are to be commended for the excellent work they are doing.

Approval Of Schools

One of the primary responsibilities of a professional group is to improve the quality of service that its members render individually and collectively to the public. The quality of professional education, more than any other single factor, determines the quality of service.

Realizing the importance of educational programs in schools of anesthesia, the AANA in 1952 inaugurated an approval of schools program.[2] The objective was to stimulate improvement in education and practice. Two methods originally recognized as necessary to the proper evaluation of the education programs were: (1) a national examination to determine the graduate anesthetist's competency, and (2) accreditation of schools of anesthesia to determine the relative merits of the educational institutions.

On May 19, 1949, the American Hospital Association endorsed the accreditation program drafted by the American Association Of Nurse Anesthetists with the understanding that the Council On Professional Practice would assist in an advisory capacity. Joint conferences were held in which Dr. Frank R. Bradley, Dr. Charles T. Dolezal and Charles Prall, Ph. D., represented the AHA in formulating our accreditation program.

Since the active beginning of the accreditation program, the number of schools has more than doubled from 52 in 1948 to 106 at the present time.

EDUCATION PROGRAMS

Through the cooperative efforts of all the directors in the schools of anesthesia, a detailed outline has been made available to all schools. An assembly of school directors, originally suggested by Sister Borromea, former Director of the School of Anesthesia at St. Francis Hospital, Peoria, Illinois and Esther Myer-Stephenson has become a feature of the annual convention.

Incumbent upon the members of the accreditation program has been the responsibility of distributing catalogs of teaching aids, sample lectures, reprint kits, student record kits and many other devices aimed at helping the schools on subject presentation.

REFRESHER COURSES AND INSTITUTES

During the past two years, refresher courses have been held for experienced anesthetists whose formal training did not meet the requirements of the Association. The performances of the graduates of these refresher courses have been phenomenal. Despite the fact that the average age of the students attending was in the mid-forties, the vast majority of them passed the qualifying examination with flying colors.

With the cooperation of the AHA program for institutes, AANA has, in the past ten years, conducted several refresher courses of this type and this year, on the insistence of members for a refresher course similar to that given non-members, a class was held in Chicago in which 110 members attended.

In July of this year a special course with university credits will be held for persons who are interested in teaching in schools of anesthesia for nurses. The course will be held in conjunction with Roosevelt University in Chicago. Applications will be accepted up until the end of May.

Our full time Educational Director, Miss Clarene A. Carmichael, coordinates all of our educational programs. Her duties also include instruction in the refresher courses, visits to all of the schools of anesthesia at least every third year, and the conducting of workshop programs. Questions for the qualifying examination are prepared under her supervision by the Directors of the Schools of Anesthesia.

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[2] Accreditation of Schools of Anesthesia for Nurses, AANA, 1952.

THE QUALIFYING EXAMINATION

Qualifying examinations for membership in the Association are conducted semi-annually in over 30 university testing centers throughout the world. More than 70% of our members have been admitted to membership after passing the examination that was instituted in 1945. Test items are based on class work given in the schools and are later analyzed with the help of the Department of Psychometry at Roosevelt University. Established well in advance of the Approval of Schools Program, the examination has served well not only as a device for the admittance of new members but also as a gauge of the performances of the schools and the individual.

INSURANCE

The Financial Security Program recently established by the Association provides every member with the opportunity to protect herself against the two greatest hazards of financial loss: Liability—personal and professional, and loss of income through disability, plus a specially prepared retirement income plan for AANA members only. Still in its developmental phase, this program is being accepted by an ever-increasing number of members. For the younger members especially, there is no better opportunity for the establishment of a truly effective personal financial security program.

MEMBERSHIP

Studies have been made in order to tell us more about ourselves, individually and collectively. They reveal that 4% of our members are men; 4% are in the armed services; 6% are Catholic Sisters; 41% are married.

In addition to the postgraduate course in anesthesia, 14% of our members are college graduates with an additional 22% having attended college.

The number of persons working in hospitals of 100 beds or less is approximately 40% of the membership, with 60% in hospitals of 100 beds or more.

The government of our Association is controlled by its members. The active members attending annual meetings participate in the voting of bylaws, other affairs of the association, and in the election of officers.

Each member of AANA is a registered professional nurse who has specialized in anesthesia.

It has been proposed that recognition of the special qualifications required of AANA members be designated through the selection of a title distinguishing them from persons whose qualifications are unknown. A pending revision of the bylaws provides that members be permitted the use of the title, "Certified Registered Nurse Anesthetist" or "CRNA."

In recognition of the long-time service of the charter members of the Association, the proposal has been made to give them the opportunity of subscribing to Life Membership.

THE FUTURE

In outlining long range plans for the Association's future, I can do no better than to reiterate the recommendations made by the Planning Committee in a summary of its findings.[3]

It was established that 48% of the anesthesias in the United States are administered by persons whose qualifications are not known. No progress has been made in the past 5 years toward relieving the appalling shortage of fully qualified anesthetists.

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[3] A Survey of Anesthesia Service, 1955; Jessie E. Compton, R.N., Marie N. Badger, R.N., Minnie V. Haas, R.N., and Agnes M. Lange, R.N.—Journal AANA, **23**: 223-235, November, 1955.

The need for recruitment and additional training facilities is obvious. The AANA's responsibilities are clearly indicated in the need to continue to provide means for keeping its members informed of the developments in anesthesia; to provide adequate training for students in schools of anesthesia; to encourage an increasing number of such schools and to encourage trained persons to share in the responsibility for anesthesia service in all hospitals where such service is required.

The maintenance of high standards of service and of professional attitudes are the goals we must keep ever before us.

We have a guide in the published objectives of our Association, and if we follow these objectives we will be able to look back after another 25 years and say, "Well done!"

Objectives Of American Association Of Nurse Anesthetists From Original Certificate of Incorporation

•

1. The name of such corporation is American Association of Nurse Anesthetists.
2. The object for which it is formed is:
   a. To advance the Science and Art of Anesthesiology.
   b. To develop educational standards and techniques in the administration of anesthetics.
   c. To facilitate efficient cooperation between nurse anesthetists and the medical profession, hospitals, and other agencies interested in anesthesiology.
   d. To publish periodicals and to issue bulletins from time to time to aid in the general purposes of the organization.
   e. To establish and maintain a central bureau for information, for reference and assistance in matters pertaining to the Science and Art of Anesthesiology.
   f. To promulgate an educational program with the object of disseminating, through proper channels, the importance of the proper administration of anesthetics.

Cortisone Therapy and Anesthesia

M. Evelyn Harris, R.N.*
Cincinnati, Ohio

With the advent of cortisone therapy and consequent involution of the adrenal cortex, adrenal cortical insufficiency has become an increasing problem to the anesthetist. To better understand the physiology of this insufficiency, let us briefly review the anatomy of the adrenal gland and its importance in normal body functions.

The adrenal glands are two flattened bodies located in contact with the upper pole of the kidneys. Each gland is from one to two inches in length and consists of two types of tissue. The medulla, located in the center of the gland, makes up only about ten per cent of the total gland. The cortex comprises the outer layer of the gland and consists of epithelial cells arranged in three zones. That the adrenal cortex is an endocrine organ essential for life, or practically so, was demonstrated by several investigators during the years 1920-1930. The removal of the adrenal medullae alone was shown not to endanger life. If one-sixth or so of the total amount of adrenal cortical tissue is left, life can be sustained; this part of the gland must, therefore, produce a highly potent hormone.[1]

Several active principles have been extracted from the adrenal cortex which belong chemically to the class of fatty or wax-like substances known as steroids. Exact classification of the properties of the adrenocortical hormones is at present impossible. Two types of action are clear: one on carbohydrate metabolism (gluco-corticoid activity) and one on sodium and potassium metabolism (mineralo-corticoid activity). A third important action of adrenal hormones is anabolic and androgenic. The principal compound secreted by the adrenals that has this property is adrenosterone.[5]

The life-maintaining action of the cortical hormones is probably due to a combination of the mineralo-corticoid and gluco-corticoid effects. The best known of the mineralo-corticoids are desoxycorticosterone and desoxyhydrocorticosterone (Reichstein's Compound S). These substances cause retention of sodium and elimination of potassium.[5]. Desoxycorticosterone has long been employed clinically in the treatment of Addison's disease.

Corticosterone and cortisone (Kendall's Compound E) are perhaps the two best known compounds in the gluco-corticoid group of steroids. In addition to their direct and indirect effects on carbohydrate metabolism,

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*Instructor in Anesthesia, Cincinnati General Hospital School of Anesthesia, Cincinnati, Ohio.
Read before the 20th annual convention of the Ohio State Association of Nurse Anesthetists, Columbus, Ohio, April 11, 1956.

these hormones are essential for the development of resistance to certain forms of stress.[5] Their output is normally increased with extremes of temperature, excessive exertion, infection, mechanical trauma (including burns), strong emotion, malnutrition and the effects of some drugs.

RELATIONSHIP OF PITUITARY TO ADRENAL CORTEX

The function of the adrenal cortex is controlled almost completely by the adrenotrophic hormone (ACTH) of the anterior lobe of the pituitary. With removal of the pituitary or hypophysectomy, it has been found necessary to administer cortical extracts or ACTH to maintain normal cortical activity. The responses of the pituitary-adrenal system play a large part in the regulatory systems which protect the body from environmental insults.[10]

It is felt that the production of ACTH is largely controlled by the level of cortical steroids in the body. Chronic cortical insufficiency leads to an increase in the amount of ACTH in the blood and hypertrophy of the remaining cortical tissue. The pituitary and adrenals are so adjusted that any temporary excess or deficiency of either hormone will tend to automatically bring about a normal hormonal balance.[2]

Hayes[3] states that it has been demonstrated clinically that in hypopituitarism with adrenal insufficiency a surgical procedure is poorly tolerated before, and well tolerated after preliminary priming therapy with adrenocorticotrophic hormone. Since atrophy of the adrenal cortex is consequent to hypophysectomy, stress which normally increases the output of adrenocortico-steroids fails to influence this gland in the absence of the pituitary. The adrenal cortex continues to secrete hormones but in minute quantities, at a constant rate, and is unresponsive to stress.[3]

CORTICAL INSUFFICIENCY

If cortical tissue is partially destroyed by any process, the remaining cells show a remarkable power of regeneration. After removal of one gland, the other will hypertrophy. After removal of both glands, cortical rests, or deposits of cortical tissue, which are normally found outside the adrenal capsule in the region of the kidneys or gonads, will in time enlarge to the point of replacing the original glands as functional tissue. Until regeneration is complete, cortical insufficiency is imminent.

Biochemical changes associated with this insufficiency are as yet incompletely understood. They concern chiefly the concentrations of electrolytes and water, and the metabolism of carbohydrates and proteins. With insufficiency there is an excessive excretion of sodium and chloride by the kidney and diminished clearance of potassium. In consequence, the plasma sodium falls and plasma potassium rises. These changes are accompanied by movement of water and potassium into the cells and diminution in the extracellular fluid volume. As a result, blood pressure begins to fall, blood becomes more concentrated, and thus the renal glomerular filtration rate is progressively diminished. This renal insufficiency may result in an elevation of the blood non protein nitrogen.[2]

If sufficient amounts of sodium chloride with water are administered, some of these immediate effects may be corrected and life may be sustained for a period of time without administration of cortical hormones. The direct effects of cortical insufficiency may be effectively treated only with hormonal substitution.[2]

Such insufficiency may occur as a serious complication during or following surgery in patients not previously known to have adrenal disease. Hotchkiss and Gordon have suggested that such a crisis might be encountered in any one of the following groups: (1) patients subjected to an extensive surgical procedure, (2) senile patients with chronic debilitating disease, (3) psychotic patients, (4) patients who have urologic disorders, (5) patients who have been treated with cortisone, hydrocortisone, and/or corticotrophin or ACTH.[4]

INVOLUTION OF CORTEX POST CORTISONE THERAPY

Postoperative deaths which have occurred as a result of cortical insufficiency from prior cortisone therapy have been reported, among others, by Salassa and associates at Mayo Clinic[9] and by Fraser.[6]

Salassa and co-workers also report a further investigation of the occurrence of adrenal atrophy. A study was made to check the weights of adrenal glands of patients who died of various conditions for which they received cortisone in comparison with those who had similar conditions but who had never received cortisone.[9] Conclusions drawn by this group from the evidence presented were: (1) cortisone is capable of producing atrophy of the adrenal glands (2) this atrophy may be associated with impaired adrenal cortical function (3) both the atrophy and the accompanying functional impairment may outlast (perhaps occasionally for a long time) the withdrawal of cortisone (4) adrenal atrophy and impaired function may lead to acute adrenal cortical insufficiency in the face of sufficient stress, such as an operation (5) these effects are due entirely to suppressed production of adrenocorticotrophic hormone of the pituitary. This implies that the administration of this hormone may have the same hazard as the administration of cortisone.[9]

The minimal or maximal interval that must elapse after cortisone withdrawal before the suppressive effect may be considered to be certainly abolished is not known. It would be most unwise to assume that this interval is short. On present evidence, it seems safest to suppose that any patient who has received cortisone in significant quantities within 3 to 6 months should receive prophylactic therapy.[9] Adrenal suppression may occur with a minimal dosage after only 5 days of treatment and render the patient susceptible to a crisis long after the treatment has been discontinued.[4] It is generally agreed that probably up to 200 mg. of cortisone can be given without resultant cortical involution.

PROPOSED TREATMENT OF INSUFFICIENCY

Most authors recommend that with patients in whom insufficiency may be likely to occur in the face of stress, prophylactic therapy should be employed preoperatively. The proposed regimens of Lundy[6] and Salassa[9] include the following: intramuscular administration of 100 to 200 mg. of cortisone per day for two to three days before operation, and again on the day of operation; postoperatively, a similar schedule should be used for two or three days, gradually reducing the dosage until the previous optimal figure is reached. Usually treatment is discontinued in three to four days determined by the condition of the patient.[6,9] Cortisone given orally before operation may be of no advantage, since its effects are of relatively short duration.[9]

Salassa[9] also emphasizes that these patients should be carefully followed postoperatively with the following recommendations. They should be closely observed for the first 24 hours after surgery; temperatures, pulse and blood pressure should be checked at hourly intervals. They should not be made to fast for an excessive period of time, and if possible operation should be performed early in the morning rather than late in the day. Since these patients appear to be adversely affected by morphine and its derivatives, if given at all, smaller doses should be used. It would perhaps be better to use other types of narcotics.[9]

If, in spite of all efforts, insufficiency does occur, it is most likely to happen during surgery or up to 24 to 36 hours after operation.[6,8] Characteristics which may indicate such a crisis are sudden and profound circulatory collapse with impending irreversible shock, fall in blood pressure, rise in pulse rate, perhaps an elevation of temperature. If awake the patient may become unconscious rather quickly.[9] Any of these symptoms should be regarded as indicating a serious emergency.

Suggested treatment of this acute insufficiency include: the immediate intravenous infusion of normal saline or 5% glucose in normal saline. Hydrocortisone is the preferred adrenocortical hormone for such emergencies[8] and should be promptly administered intravenously. 100 mg. of hydrocortisone should be diluted in 500-1000 cc. of the intravenous drip and infused at a rate to be determined by the response of the patient. Root[8] advises that the rate should be 10 to 20 mg. per hour. Although it may have no immediate effect, cortisone may be given intramuscularly, since it will ultimately become effective.[9] If the patient is conscious and not nauseated or vomiting, 100 to 200 mg. of cortisone may be given orally. It is well to remember that while the activity of cortisone by this route is prompt, the duration of the activity is short (probably does not exceed eight hours).[9] Vasopressors such as norepinephrine, neosynephrine or ephedrine may temporarily aid in controlling circulatory collapse and extreme hypotension.[4,8,9] According to Hotchkiss the vasopressors can usually be discontinued within four hours after initiation of hormonal therapy.[4]

With the increased use of cortisone today, it is important to determine if the emergency patient who requires immediate anesthesia and surgery has been receiving cortisone or ACTH. In such emergencies, intravenous hydrocortisone or adrenocortical extract has been employed to maintain the unprepared patient safely. At the same time it is recommended that the use of cortisone or ACTH be resumed during the period of stress.[6]

ANESTHETIC CONSIDERATIONS

Experiments have confirmed the belief that the adrenal cortex plays an important role in anesthesia. With insufficiency, man is more sensitive to various drugs including anesthetics. With a patient who may have cortical suppression and has not been prepared prophylactically with cortisone, the following recommendations have been suggested. Agents or techniques which repeatedly produce significant falls in arterial pressure are inadvisable.[11] These include spinal anesthesia, avertin and profound depths of inhalation anesthesia. Absolute precision in technique to avoid anoxia, asphyxia or hypotension is mandatory.[11]

Ultra short-acting barbiturates may produce prolonged anesthesia with occasionally profound depression because of the increased sensitivity of these patients to barbiturates. If used in small amounts for induction there is little possibility of any difficulty. Most authors suggest nitrous oxide, oxygen and ether as the anesthetic of choice. There is probably no contraindication to the use of cyclopropane except when insufficiency is due to tumors of the adrenal glands or when manipulation of the gland is anticipated. In these cases cyclopropane, chloroform and ethyl chloride should be avoided because of the possibility of increased output of adrenalin which may predispose to serious ventricular arrhythmias with such agents.

With prophylactic treatment using cortisone, selective anesthesia for each individual patient can probably be used safely. The indiscriminate use of adrenocortical hormones in the treatment of shock is not to be encouraged. Should unexplained shock, however, develop in the course of anesthesia or surgery which fails to respond to the usual treatment of transfusion or vasopressors, adrenal cortical insufficiency should be given consideration as a possibility.

Use of Cortisone in Medicine

Among the conditions for which cortisone is administered today are rheumatoid arthritis, rheumatic fever, lupus erythematosus, Addison's disease, inflammatory eye diseases, skin diseases, allergic disorders and numerous others. Dramatic improvement has been noted with its use in status asthmaticus. Except when used for emergency replacement therapy for acute insufficiency, cortisone is contraindicated in patients with tuberculosis, chronic nephritis, acute psychosis, Cushing's syndrome, peptic ulcer and predisposition to thrombophlebitis. Existence of congestive heart failure, hypertension, diabetes, osteoporosis or chronic psychiatric disorders requires that it be administered with extreme caution. In the presence of infection, the causative organism must be brought under control with appropriate antibiotics or cortisone should probably not be employed.

Hormonal preparations which are commonly used, such as ACTH, adrenocortical extracts, cortisone, hydrocortisone, prednisone, prednisolone, and others, are manufactured under various trade names. The latter two are synthetic analogues of cortisone and hydrocortisone with anti-inflammatory activity three to five times greater than the natural steroids, thus the required dosage is less. The same precautions should be taken with patients subjected to stress while receiving the synthetic preparations or following withdrawal of therapy.

Dr. Philip S. Hench and Dr. Edward C. Kendall of the Mayo Foundation have done much of the pioneer research on steroid therapy. Dr. Hench has said, borrowing a Churchillian phrase, "Cortisone is a riddle wrapped in a mystery inside an enigma."[7] The physiology and effects of the individual steroid hormones produced by the adrenal cortex are admittedly extremely complex. In many respects, therefore, a full understanding of the subject and its influence on anesthesia remains to be attained.

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Anesthesia Deaths in Obstetrics

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With the reduction of maternal morbidity from other causes such as hemorrhage, infection, and toxemia, the relative number of parturients who die from anesthesia is increasing. The prevailing concept of the relative unimportance of obstetric anesthesia by both the medical and nursing profession is appalling. Too often the responsibility of anesthesia for delivery is delegated to the most recent graduate in the department or, worse still, to someone completely without training in the administration of anesthetic agents. Errors in the technic of administration and the use of contraindicated agents are the natural result of such inexperience. In some cases, the failure of the person involved to observe such basic principle as the maintenance of an adequate airway has resulted in the loss of life.

Unfortunately, or otherwise, modern woman has been educated to expect relief of the pains of parturition. It is a fact, however, that in almost all cases successful labor and delivery will occur without maternal medication of any kind! The medical literature reveals few if any cases of women dying from the pain of childbirth but we are hearing of too many who are dying from well-meaning attempts to relieve such pain. In those states where maternal mortality studies are made, anesthesia has been found to rank fifth among causes of maternal death. This shocking fact poses a real problem for the medical and the nursing profession.

At the recent annual meeting of the American Academy of Obstetrics and Gynecology in Chicago, Dr. Charles Stevenson of Wayne University, Detroit, presented a most challenging paper on maternal deaths from anesthesia. His data were collected from the State of Michigan for the year 1950 through 1953. During this period there were 515 maternal deaths of which 34 were the direct or indirect result of anesthesia.

For purpose of definition he states that an anesthetic death is that which occurs while the patient is under the influence of an anesthetic agent, or which results from complications arising from the anesthetic agent or method used.

In some cases it is difficult to ascertain the specific contribution anesthesia makes to death. In others the implication is only too clear. Accordingly, for the purpose of study five categories were set up as follows:

Group I. *Direct* cause of death in a well, good-risk patient.

Group II. Direct *precipitating* cause of death in an ill, poor-risk patient

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Group III. ***Probable*** contributing cause of death with other morbid factors present.

Group IV. *Possible* contributing cause of death with other morbid factors present.

Group V. Probable ***non-contributory*** cause of death, but cannot be so proven.

The findings of Dr. Stevenson in the Michigan study prompted us to review our experience in the Department of Obstetrics at the University of Tennessee. At the City of Memphis Hospitals from 1946 through 1955 there were a total of 79 obstetric deaths. A review of these charts revealed 11 in which anesthesia played the principle or a strong contributing role in the patients' deaths.

So that our experience might be compared to that of Michigan, tables have been prepared and our cases placed in the various categories suggested by Stevenson. *Table 1* reveals that our incidence of anesthetic fatality is twice that of the State of Michigan. A comparison of the two groups may not be justified, however, when one considers that the Michigan series is a heterogeneous one including rural and urban deliveries with wide variation in obstetric and anesthetic experience. On the other hand, ours occurred in a large charity hospital, staffed by University personnel, where obstetric complications of extreme degree are encountered.

The two groups may be compared further by classifying each according to the degree of responsibility of anesthesia in the maternal death. Table 2 reveals that in each study the greatest number of deaths fall in GROUP I. This is most distressing, for probably all of those women would have survived had no anesthetic been administered. The use of local anesthesia would have resulted in adequate pain relief and probably spared the patients' lives. Stevenson, however, reports one case in which adrenalin, instead of procaine, was injected for pudendal block with the fairly prompt death of the patient. Local anesthesia is not entirely benign in itself, therefore, and may be lethal by virtue of gross error as in the above case or by marked sensitivity to the drug.

Table 1.

	Total Obs. Deaths	Anes. Deaths	%
Michigan 1950-1953	515	34	6.6
Memphis 1946-1955	79	11	13.9

By way of explanation, it should be stated here that the responsibility of anesthetic administration has fallen almost entirely upon the house staff of the department of obstetrics. This is not ideal but efforts are being made to correct this situation at the present time. The great majority of anesthetics are, of necessity, regional in variety with saddle block being the most common. All too often "token general anesthetics" are administered by interns or residents using nitrous oxide or ethylene for the spontaneous delivery of multiparas. In such situations laryngospasm is occasionally seen and the danger of aspiration of vomitus is omnipresent.

Table 2.

Group	Michigan	Memphis
I.	24	5
II.	5	1
III.	2	1
IV.	2	3
V.	1	1

Finally, it would be interesting to see how deaths from anesthesia compare with other causes on our own service. In this tabulation only the primary cause of death was considered. Six of the eleven anesthetic deaths were so considered. As seen in Table 3, toxemia is our greatest killer with death from hemorrhage in second place. Anesthesia is the fourth most frequent cause of death in our series accounting for 7.6 per cent of deaths in obstetrics at the City of Memphis Hospitals.

Perhaps a more detailed analysis of some of the case histories would be of interest. Of the 5 deaths in GROUP I, 3 were regional anesthetics, 1 general, and 1 patient was given a variety of agents.

The first patient was a 25 year old gravida 2, para 2 with previous history of rheumatic heart disease. Repeat cesarean section was started under pontocaine spinal anesthesia. Sixteen minutes later cardiac arrest suddenly occurred but heart action was restored by thoracotomy and cardiac massage. A living male infant was delivered but the mother expired 5 days later of sepsis apparently secondary to the chest surgery.

The second patient was operated for a ruptured tubal pregnancy. Anesthesia was cyclopropane, nitrous oxide and ether given by a nurse anesthetist. Cardiac arrest occurred suddenly after 31 minutes of anesthesia with death 4 minutes later.

One of the most tragic errors in technic occurred in the case of a normal 20 year old gravida 2. Caudal analgesia was instituted for delivery. The injection of the usual initial dose of 30 c.c. of metycaine resulted in an unrecognized sub-arachnoid block. Skin analgesia was detectable to the highest cervical segment. Respiratory arrest followed and all attempts at resuscitation were to no avail. Autopsy revealed an abnormally low lying dura.

A tragedy of errors resulted in the death of the fourth patient, a 16 year

Table 3.

	Cases	Per Cent
Toxemia	33	41.8
Hemorrhage	23	29.1
Infection	8	10.2
Anesthesia	6	7.6
Heart Disease	4	5.0
Carcinoma	1	1.3
Miscellaneous	4	5.0

old primigravida. Metycaine was given as a saddle block anesthesia without effect. Nupercaine was then given with satisfactory pain relief but labor ceased at 7 centimeters dilatation. Five hours later labor had resumed and the cervix was completely dilated. Nupercaine was again given as saddle block which sufficed for delivery but was supplemented with ethylene-oxygen for closure of the episiotomy. Soon thereafter blood pressure rose to 190/120 and then suddently fell. Rupture of a viscus or intra-abdominal bleeding was suspected. Laparotomy was carried out under nitrous oxide-ether anesthesia with negative results. The patient died several hours later. Final impression was that death resulted from allergy to one or more anesthetic agents (most likely nupercaine).

The final patient in this group, a 38 year old gravida 8, was delivered under metycaine caudal. She developed a sacral abscess and died 4½ weeks later of septicemia and pulmonary embolization.

Of the remaining patients in the other 4 groups pregnancy was complicated by severe toxemia in 3 and ruptured tubal pregnancy of the tragic variety in 2. The sixth patient, placed in category V, died following rupture of the uterus and profound shock. Hysterectomy was performed but the patient died on the table following efforts to pass a Miller-Abbott tube into the stomach with the operator attempting to assist the procedure by manipulation from within the abdominal cavity.

The one patient placed in group III deserves special mention since her case so well illustrates death as the result of the unavailability of anesthetists at certain critical times. With a diagnosis of ruptured tubal pregnancy and blood pressure momentarily stabilized by virtue of fluids and transfusions, general anesthesia was requested. The one nurse anesthetist on duty was occupied with a thoracic case of possible long duration. The obstetric resident aware that regional anesthesia was usually contraindicated in such cases elected to attempt laparotomy under spinal metycaine. The patient expired on the table in shock, the result of blood loss and spinal anesthesia.

It is not surprising that the majority of anesthetic deaths in both Stevenson's series and ours resulted from regional anesthesia. Too often conduction anesthesia is the anesthetic of necessity rather than the agent of choice. It is often used for the simple reason that no one trained in the administration of general anesthetics is available. This problem must be greatly compounded in rural areas.

After the perusal of such records as these one is struck with the necessity for improvement. The responsibility is ours — nurse anesthetists and doctors alike. Efforts must be directed toward increasing the number of trained anesthetists and finally the adequate distribution of such personnel among all services requesting anesthesia. Death is just as lethal whether it occurs incident to aortic anastamosis or following attempts at pain relief in childbirth.

A temporary solution to the problem is to encourage the use of local anesthesia in poor risk cases and in situations where regional methods are contraindicated. The ideal solution, of course, is the execution of such plans that will result in an adequate supply and the ready availability of anesthetists trained in both general and regional technics with an understanding of those anesthetic problems peculiar to obstetrics.

Anesthesia Management of Patients With Traumatic Injuries

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In 1955, a casual check made at John Gaston Hospital, Memphis, indicated that approximately 7% or, 1 in 14, patients reaching surgery were victims of extensive traumatic injuries. In discussing the special problems of anesthesia management of these patients on the basis of experience gained, examples of commonly encountered injuries including violent and criminal origin will be presented.

Anesthesia is especially dangerous for a patient who has been recently exsanguinated, is drunk and disorderly, and has a stomach full of food—for example, beer, beans and barbecue.

Alcoholic intoxication makes fairly good preanesthetic medication, but it is nevertheless confusing to the correct evaluation of the patient's condition. Signs presented by the inebriated patient may closely resemble those of shock. Alcohol effects, such as vasodilation, may accentuate the symptoms of shock.

Inebriation produces, in some patients, disorientation and/or mild to severe delirium. Other patients may be quieter but all are, in varying degrees, under narcosis from the alcohol ingested. This condition tends to aid induction of anesthesia.

Alcohol in large doses narrows the pulse pressure, depresses the vasomotor centers and lowers the blood pressure. These symptoms are responsible for accentuating the signs of shock from blood loss and injury. Alcohol depresses liver function, therefore interferes with drug detoxification.[1]

THE PROBLEM OF UNDIGESTED FOOD

The recently ingested meal is not only a menace to the patient's life, but a source of serious concern to the anesthetist. Vomiting and aspiration of solid food particles at a time when the patient cannot voluntarily control his natural airway results in acute, complete respiratory obstruction causing rapid suffocation. This hazard is present in all phases of anesthesia. Even in the absence of solid food in the stomach, the acid nature of the gastric contents, if aspirated, will produce a chemical pneumonitis further interfering with oxygenation in a patient who may already have a hemoglobic hypoxia associated with blood loss. Most anesthetic deaths from aspiration occur during the stimulation of the vomiting center during induction; following relaxation of the cardiac sphincter of the stomach; during the mainte-

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nance phase, or while passing through the vomiting zone on recovery.

In evaluating the status of the patient's stomach, the period of time from ingestion of food to the time of injury is most important since digestion halts when injury occurs. An accurate history of food ingestion is difficult to obtain, and the stomach has been known to hold food as long as 24 hours under stress.

When the stomach contains solid food the problem can be met in several ways. The stomach may be lavaged by means of a large bore esophageal tube until clear, with the patient placed in a head down position while treatment is carried out. The ordinary Levin's tube is useless except to incite vomiting, whereas stomach lavage with the esophageal tube has the advantage of inducing vomiting as well as washing out. The use of an agent such as ethylene will also induce vomiting, and when vomiting has been initiated the mask is removed, allowing the patient to empty his stomach. Also, the patient intubated with a cuffed intratracheal tube may be induced to the third stage of anesthesia with a fast acting agent such as cyclopropane in high concentration. The tube separates the gastro-intestinal tract from the respiratory system, and the procedure has proven to be highly satisfactory. However, in this treatment hazards are often involved which require an anesthetist both adept at intubation and experienced in the use of cyclopropane.

BLOOD LOSS

When questioned about blood loss, patients usually estimate considerably in excess of the actual loss, while, as a rule, estimations made by surgeons fall under the actual loss.

Increased pulse rate and drop in blood pressure are regarded as cardinal signs of shock, but other signs are of equal importance. Among these will be found pale, cold, moist skin; lowered body temperature; lowered venous pressure, and a general appearance of collapse. Air hunger, with gasping respirations of reduced tidal volume is another sign not uncommonly present. This is thought, based on clinical observation, to account for the patient in shock who maintains a fair blood pressure level until he is given oxygen and assistance with respiration and then suddenly exhibits a pressure fall.

In considering blood loss certain facts should be noted: (a) the total blood volume of an average man with 4500-5500 cc. is about 1/13th of the body weight; loss of over 30% of this supply makes transfusion mandatory[2] (b) in a healthy person a 550 cc. blood loss will reduce the hemoglobin about 2.3 gms.[2]— or, roughly 7 points on the hematocrit scale (c) a hematocrit determination made within a short time after extensive blood loss is completely unreliable because hemodilution from shift of tissue fluids to the circulation has not yet occurred[2] (d) the intravenous administration of fluids alone will reduce the cell count by reason of dilution of the intravascular blood volume.[2]

There are no hard and fast rules governing blood replacement. It is administered according to need. One case in this study required 16,000 cc. for replacement in the face of active hemorrhage.

The use of fluid alone for replacement is not feasible for reasons outlined above. Pooled blood plasma is used only in emergency because of the possible transmission of viral hepatitis.

Plasma expanders such as Dextran, Plavolex and other dextrose polymers are seldom used in John Gaston Hospital. It is believed that there is no adequate substitute for whole blood.

SELECTION OF AGENTS

Sodium Pentothal is regarded as definitely hazardous to the patient with food in his stomach, to the patient in shock from reduced blood volume with serious interference to the oxygen transport system, and to the patient who is intoxicated. With Sodium Pentothal many hazards are involved. There is the danger of cross tolerance between alcohol and Sodium Pentothal; the risk of exaggerated pharyngeal and laryngeal reflexes; the risk of relaxation of the cardiac sphincter of the stomach increasing incidence of regurgitation with resulting chemical irritation of the pharynx and larynx by acid stomach contents. The hazards of tidal hypoxia, stagnant hypoxia and histotoxic hypoxia resulting from depression of respiration and progressive decrease in sensitivity to carbon dioxide[1] and, non-controllability also exist in the use of Sodium Pentothal.

Where the patient has suffered extensive blood loss and has a full stomach, a small dose of Sodium Pentothal is occasionally used for induction. Sodium Pentothal is also effective in combination with nitrous oxide intratracheally administered, when a non-inflammable anesthetic is necessary, but blood replacement must first be supplied.

Muscle relaxants are used with caution and primarily to assist intratracheal intubation, with the shorter acting succinylcholine chloride preferable to curare.

Ether is satisfactory for use with traumatic injuries when blood loss is not more than 2.5 per cent.[3] Its end effect on the circulatory system is decompensatory and makes it less useful when blood loss is severe.[3] Adequate anesthesia with high oxygen concentration may be secured with ether.

The chief disadvantages of either method are slow induction and recovery with temporary deleterious effects on metabolic processes.

Ethylene and nitrous oxide are useful as carriers of a more potent agent and as diluents of high oxygen concentrations. Nitrous oxide is also used in combination when non-inflammable anesthesia is a necessity.

Cyclopropane is the mainstay in anesthetic agents for use in traumatic injuries because it maintains near normal circulatory integrity in the presence of blood loss,[3] it does not affect gastric tone,[1] it has little effect on metabolic processes,[1] it is controllable,[1] it has rapid action and permits prompt recovery with an average of ten minutes for return of reflexes,[1] and it has the ability to maintain adequate anesthesia with high oxygen concentrations.

TRAUMATIC INJURIES

The growing traffic accident rate in the United States produces many outstanding traumatic injuries. Compound fractures are common and quite often present the combined hazards in anesthesia of alcoholism, shock, blood loss and the full stomach.

Stab wounds may be relatively minor or extremely serious. Some are attended by minimal blood loss and are treated like a secondary surgical closure while others exhibit severe and acute blood loss. Nearly all are of violent origin and are commonly seen in the drunk and disorderly.

Shot gun wounds are almost always of major proportions, especially when the victim has been "zeroed in" at close range. In these wounds, with incredible blood loss, tissue trauma is extensive—requiring prolonged corrective surgery.

SUMMARY

The anesthetic management of patients who have been subjected to severe and extensive trauma normally revolves around three chief problems —alcoholic intoxication, exsanguination, and the full stomach.

Blood replacement is of paramount importance and must be accomplished promptly and plentifully either before or during surgery.

Rapid induction to a plane of anesthesia deep enough to perform intratracheal intubation with a fast acting agent such as cyclopropane seems to offer the greatest measure of safety with the least hazard.

When these factors are recognized, and the associated problems adequately managed, the number of survivors from extensive trauma will be greatly increased.

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Pediatric Anesthesia

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The importance of anesthesia in children has not always been duly remarked. Even now it is not always duly remembered by the anesthetist. Until a few years ago, the child was considered a "little adult," and was treated as an adult in a "half pint" manner.

It has been demonstrated that at the age of 1 the metabolic rate is higher than at age 20. At age 6 it reaches the highest normal metabolic rate during the individual's lifetime. With these facts in mind it is not difficult to understand why an infant, or a child of 6, presents anesthetic problems different and separate from those of the adult.

Anesthesia Induction For Children

Psychologists tell us that the basis of all fear is insecurity. In no class of patients is this so clearly demonstrated as in children brought to the hospital a few hours prior to surgery. How often have we not heard the familiar terror-stricken cry of a child echoing through the corridors as it is brought to the operating room? This does not come from the spoiled, pampered child alone—but from all children unprepared for anesthesia.

Fear is a natural instinct completely uninhibited in children. They fear the strangeness of anesthesia which they do not understand. The child cannot comprehend surgery without pain. It cannot understand not being able to awaken at will, nor can it apprehend what there is about anesthesia that will prevent it from awakening during the operation.

Though a child's fear of anesthesia makes him unhappy, it is the psychological reaction to fear that is detrimental to the youngster. Emotional excitement and fear produce increased activity in the sympathetic nervous system with the concomitant increase in adrenalin output. This may set the stage for fibrillation following such added stimulus as delirium during the second stage, loud voices, or any other physical disturbance of the patient during the induction period.

Proper psychological approach to children varies according to age. Children from 8 to 14 can be approached on an adult basis. From the ages of 2 to 8, however, special treatment and handling is required. As rosy a picture as truth will permit should be presented to the child with familiar illustrations easily understood. Children like praise and attention, and they appreciate such treatment. From this standpoint, the "Bunny Room" in the hospital is a great aid in preparing children for surgery. Here, the child is presented with a toy of his own choosing before being anesthetized.

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In infants, violation of the fundamentals of anesthesia more quickly produces far graver conditions in the patient than in older children and adults.

With these facts in mind, three important factors should be taken into consideration:

1. Appraisal of the patient's general physical condition.
2. Special preparation for anesthesia.
3. Premedication.

In appraisal of physical condition careful scrutiny of the hospital chart gives the anesthetist valuable information regarding the child. The history of diseases which have impaired the functioning of the heart, liver, kidneys or other vital organs is highly important. Dehydration and electrolyte imbalance are corrected prior to surgery. Retarded development should also be noted. A history of frequent attacks of bronchitis or asthma suggests an increased risk of postoperative pulmonary complications. Pale asthenic children with subcutaneous fat and transparent skin do not withstand anesthetic or surgical abuse.

Special preparation for anesthesia should be started the night before with careful attention to detail. Unfortunately, all patients do not receive preparation routinely. In emergencies, patients are brought to the operating room with stomachs full of food. Due to the danger of aspiration of vomitus local anesthesia should be used whenever possible. If general anesthesia is unavoidable, nitrous oxide with adequate oxygen can be used for induction with the patient in lateral Trendelenburg position. Gastric lavage is a prophylactic measure. While the throat reflexes are still active, vomiting may be induced by irritation of the pharynx with the suction tip.

Fluid Balance

Dehydration and electrolyte imbalance are now corrected prior to surgery. In addition, special attention is paid to these problems postoperatively. Blood loss during surgery will reduce the body fluids by drawing on the limited extracellular fluids to maintain an effective blood volume. Futhermore, ether, which is the most widely used anesthetic for children, produces a hemoconcentration which in itself produces undesirable fluid changes.

During pediatric anesthesia one often observes varying degrees of diaphoresis. Room temperature, excessive humidity and the heat from operating lights play an important role in the problems of fluid balance.

Dehydration and electrolyte imbalance plus the resulting pyrexia are a contributing factor to the production of convulsions. Therefore, enough stress cannot be placed upon maintaining fluid balance during pediatric anesthesia with adequate build-up prior to surgery and sufficient replacement during surgery.

Preanesthetic Medication

Preanesthetic medication for infants and children has been a controversial issue for some time. On the one side many anesthetists, surgeons and pediatricians believe the drugs used are unnecessary and even dangerous for the child. They hold with authority to statements appearing in textbooks that infants are excessively sensitive to sedatives—especially the opiates—and that toxic, even fatal reactions, to the belladonna drugs are not infrequent. Some who object to the use of sedation in children do so because they believe it is unnecessary in the preoperative period since the child is incapable of understanding and will soon forget all about his unpleasant experience.

Recent studies present us with answers to these chief objections. Toxic reactions to the belladonna drugs (scopolamine and atropine) do occur, but they are infrequent and are undoubtedly a true drug idiosyncrasy. The so-called atropine flush, generally a scarletiniform rash, is not considered to be a toxic reaction, but often accompanies doses of medication. According to a survey made by Deming[1] over 3500 administrations of scopolamine and atropine were given to children with only 3 toxic reactions noted.

Scopolamine is probably preferable to atropine for two reasons: (1) scopolamine has a greater drying effect than atropine in the same dosage; therefore, the desired result may be achieved with a smaller dosage when scopolamine is used (2) the duration of action of scopolamine is twice as long as atropine. Another minor advantage of scopolamine is its depressing effect of the cortical activity of the central nervous system. On the other hand, atropine is a central nervous system stimulant.

An excessively rapid and exhausting respiratory rate often occurs in children who do not receive premedication and who are given open drop ether without provision for adequate elimination of carbon dioxide. This will soon exhaust the limited reserve energy of an infant as well as the respiratory center.

Dosage of the drugs depends upon (a) the apparent age of the child (the main guide to this is weight and not years), (b) anesthetic agent chosen, (c) condition of the child, (d) state of hydration.

ANESTHESIA FOR TONSILLECTOMY

To enumerate the many and varied technics and agents is impractical. Only the unusual and the less frequently used technics for various surgical procedures will be discussed. However, anesthesia for tonsillectomies and adenoidectomies is of constant interest and, because of frequency, is as important as many more complicated procedures.

Vinethene is used for induction of small children. It is best used with the benefit of premedication because it does increase secretions. One must be aware that prolonged use of this agent nullifies all of its safety factors. Suction apparatus should always be available.

Nitrous oxide in combination with adequate oxygen is an ideal agent for induction of anesthesia of children in the "in-between" age group. Pentothal induction with one of the relaxants followed by endotracheal intubation is used for the older children. Ether is the more generally accepted anesthetic choice to maintain anesthesia, the vapor being insufflated either through the intrapharyngeal or endotracheal catheter.

In tonsil and adenoid operations, mechanical obstruction is usually caused by improper depression of the tongue or hyperextension of the jaw or by improper use of the mouth gag. If the surgeon cannot proceed without causing obstruction, an endotracheal tube should be inserted to assure and maintain an adequate airway.

Classified as a minor procedure, requiring little or no preparation for surgery, with anesthesia given by anyone who can drop ether, and negligible postoperative care, tonsil and adenoid operations are among the most often neglected by anesthetists. One wonders what statistics would show if we were able to measure the permanent and irreversible cerebral and cardiac damage resulting from poorly administered anesthesia and lack of postoperative care.

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CHOICE OF AGENTS

It is becoming increasingly difficult to state dogmatically that a certain agent or technic is best for a particular procedure. The truth of this becomes more obvious when one examines the wealth of anesthesia literature and visits with different experts who successfully employ numerous and varied technics for the same types of surgical procedures with comparable results in the patient's comfort, adequacy of anesthesia for the procedure, and favorable statistics regarding complications and postoperative results.

Cyclopropane offers many advantages for pediatric anesthesia. In operations requiring an open chest, cyclopropane has the advantage of producing quieter and more easily controlled respiration. The tendency to perspiration is decreased, hence fluid loss is markedly reduced with fluid maintenance made easier. Emergence from cyclopropane anesthesia is more rapid and smooth than emergence from anesthesia produced by other anesthetic agents.

Pentothal, nitrous oxide and oxygen can be used for older children for many procedures. Cases requiring intubation can frequently be done with Pentothal and one of the relaxants.

Curare and Anectine have proven valuable in pediatric anesthesia especially in thoracic surgery in older children.

Rectal Pentothal for minor plastic and neurosurgical cases such as lip laceration, encephalogram and burn dressings of smaller children holds a prominent position in the field of pediatric anesthesia. It is valuable as an induction agent for frightened children. However, some means of resuscitation should be available whenever Pentothal is administered in the patient's room. It has been found that rectal administration of a 10% solution of Pentothal calculated on 0.2 cc per lb. wt., or 20 mg per lb. wt. is generally satisfactory.

SPECIAL PEDIATRIC SURGERY

Special pediatric surgery deserves consideration because anesthesia methods must often be varied from the more common procedures. In operations for esophageal atresia, with or without the associated tracheal-espohageal fistula, the time required to anastamose the esophageal ends is 2½ to 3½ hours, an extremely long procedure for even the heartiest of adults to withstand.

It is important that the anesthetist be in a position to watch the operative site at all times for two reasons: (1) the infant is extensively covered and hidden by sterile drape sheets and therefore adequate view of the infant's face is obscured, (2) the respiratory rate in infants is from 30/100 per minute, and it is difficult to determine the depth and rate by watching the excursions of the breathing bag. Retraction on the extremely thin pleura is great, and because of this the baby soon tires. Therefore, controlled respiration is advantageous. Controlled respiration is one of the factors which makes possible prolonged thoracic surgery.

Patients with esophageal atresia are not always intubated. Gastrostomy and sometimes the chest incision are done under local anesthesia. After this the baby is given ether-nitrous oxide-oxygen with controlled respiration, using one of the non-rebreathing valves such as the Dighby Leigh, Stevens-Slater, or Finke Modification of the Stevens-Slater.

This same method can be used on children up to 8 to 12 months of age for cardiac surgery of short duration. This type of cardiac case is usually done in a supine position. Open drop ether is used for induction, and shortly before the pleura is opened, controlled respiration is started. Many anesthetists use cyclopropane and to-and-fro technic for this type of case. Older children and patients placed in a lateral position are intubated.

Some exploratory thoracotomies are done with lowered body temperature sometimes called refrigeration or hypothermic anesthesia. The procedure is done as follows: anesthesia is induced with open drop ether and the child is then surrounded by ice bags. The body temperature is lowered gradually until the rectal temperature reaches approximately 96°. Very little or no anesthesia will be required for the major part of the surgical procedure. Intubation is done before surgery begins. If the operation is for correction of a Tetrology of Fallot, when the aorta and pulmonary artery are anastomosed, hot water bottles will be applied. When the temperature begins to rise the patient begins to react. Anesthesia is used for closure.

Newborn infants with intestinal obstruction come to the operating room from 2 to 15 days after birth. This is a study unto itself, for adults with the better compensating ability are grave anesthetic risks. Because of vomiting, fluid and electrolyte loss, loss of weight, abdominal distention and high temperature, these infants are extremely poor risks. The best of preoperative preparation is inadequate and seldom satisfactory. A Levin's tube should be in place and functioning prior to surgery. Endotracheal intubation is not required, but it should be available. Open drop ether or non-rebreathing methods and the use of curare may be effective since most doctors prefer light anesthesia for this type of surgery.

In cleft lip or palate surgery, an Ayres T-piece is very useful with an endotracheal tube and takes up less space than a bag on a non-rebreathing valve device.

Problems which occur in orthopedic surgery concern the use of the cautery and positioning. Every precaution should be used against the use of inflammable or explosive agents in the presence of cautery.

In positioning, the same rules apply in children as in adults. There must be no pressure points causing postural paralysis, and when the patient is in a prone position ample space must be allowed for free motion of the diaphragm. Sponge rubber made into rolls and covered with old oxygen tent material and stockinette make ideal chest rolls for adults as well as for children. They are easily cleaned. A board in the form of a horseshoe or U provides ideal support under the mattress for spinal fusions and aids in preventing poor positioning of the arms.

CONCLUSION

Persons administering anesthesia to children must check every detail in advance. Children should be checked for loose teeth and foreign objects, such as gum, in the mouth prior to anesthesia. Whatever is to be used for anesthesia should be tried before it is needed. It must be known that connections fit. Laryngoscopes should be available and functioning. Suction apparatus, tubes, and tips should fit and function. No anesthetic should be started until a suction apparatus and some means of resuscitation are available.

Why is it so important to check everything to be used for anesthesia beforehand? The answer is—there is scarcely more than *one minute* in which to revive a helpless patient from serious danger or even death. With care and experience anesthesia can be given to any patient with relative safety if the patient is in condition to tolerate the operation.

Present Status of Approved Schools

Clarene A. Carmichael, R.N., B.S.*
Chicago, Illinois

The Educational Program of the American Association of Nurse Anesthetists has been making tremendous progress in the last few years and the accreditation of schools, starting in January, 1952, was a major step in this progress. Continued growth and advancement is possible because five dollars of every active member's dues go toward the support of the educational program. If the members are enthusiastic enough about the educational projects to so support them, it is only right that they be informed of the changes that are taking place and be aware of the present status of our schools in order to encourage and guide those interested in entering the field. It is to this end that this report has been prepared.

At the present time there are 106 schools of anesthesia for nurse anesthetists, with approximately 835 students, approved by the A.A.N.A. Ninety-two have full approval and fourteen have temporary approval. This latter group includes new schools that have agreed to meet the standards of the Association, but have not yet had graduates take the National Qualifying Examination for Membership and have not been visited by the accrediting advisors.

In order to be approved a school of anesthesia must agree to meet the requirements of the AANA and allow periodic inspection. Minimum essentials include the following:

> Selection of students must conform with the requirements of the By-laws of the American Association of Nurse Anesthetists. In other words, the student must be a high school graduate or the equivalent and must be currently and validly registered as a graduate professional nurse. The following course requirements are the minima. The duration of the course must be twelve months. The number of cases of clinical experience must be 325 totalling 400 hours. The number of hours of classroom instruction on the basis of a revised Class Outline must total 200.
> The Class Outline covers the following major divisions:

I. Orientation to the study of anesthesia

- A. Department management and organization
- B. Ethics
- C. History of anesthesia
- D. Hospital and school policies
- E. Legal aspects of anesthesia
- F. Physical plant
- G. Professional adjustments and psychology

II. Anatomy in relation to anesthesia

- A. Review of general anatomy
- B. Nervous system
- C. Respiratory system
- D. Circulatory system

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*Educational Director, A.A.N.A.

- E. Endocrine system
- F. Excretory system

III. Physiology in relation to anesthesia

- A. Review of physiology
- B. Nervous system
- C. Respiratory system
- D. Circulatory system
- E. Endocrine system
- F. Excretory system

IV. Chemistry and physics in relation to anesthesia

- A. Fundamentals
- B. Anesthetic agents
- C. Accessory drugs
- D. Therapeutic gases
- E. Explosions
- F. Biochemistry

V. Pharmacology in relation to anesthesia

- A. Stages and signs of anesthesia
- B. Anesthetic agents
- C. Accessory drugs

VI. Methods and procedures

- A. Equipment
- B. Technics
  - 1. Anesthetic
  - 2. Resuscitation
- C. Positions

The following types of clinical experience are required:

I. Agents

A. Ether	50 cases
B. Nitrous oxide or ethylene	50 cases
C. Pentothal sodium or other barbiturates	50 cases
D. Muscle relaxants	10 cases

II. Methods of anesthesia

A. Inhalation	
1. Open or semiopen	10 cases
2. Semiclosed	30 cases
3. Closed (carbon dioxide absorber)	30 cases
4. Insufflation	5 cases
B. Intravenous	15 cases
C. Regional (management of)	15 cases
D. Intratracheal (actual intubation)	6 cases

III. Types of cases

A. Head	
1. Intracranial	2 cases
2. Extracranial	6 cases
3. Intrapharyngeal	10 cases
B. Neck	3 cases
C. Intrathoracic	2 cases
D. Extrathoracic	10 cases
E. Intra-abdominal	30 cases
F. Extremities	8 cases
G. Obstetrics	15 cases
H. Operations on the back	5 cases
I. Pelvic	5 cases
J. Perineal and rectal	5 cases
K. Renal	5 cases

In addition to clinical experience in the administration of the foregoing agents and methods, it is recommended that the student should have experience in the administration of other agents such as vinethene and cyclopropane, geriatric and pediatric anesthesia and gas therapy.

It should be clearly understood that these are the minimum essentials and that most of the schools are far above these requirements. For instance, a survey last year showed that the average number of hours of classwork was 275, or 75 hours above the minimum.

Although the preceding items are somewhat standardized, other policies within the individual schools vary greatly and in December, 1955, a questionnaire was sent to each school in order to determine the nature of some of these variations. Eighty-two per cent of the schools responded and the following analysis is on the basis of this response. It might be well to mention that the 19 schools that did not respond were analyzed on the basis of known facts, such as size and length of course, and found to be a random group so that it seems safe to assume that the following analysis is valid.

Lenth Of Course

Months	% of Schools
12	69.0
13	1.2
14	2.4
15	5.9
16	2.4
18	10.7
24	7.2
26	1.2

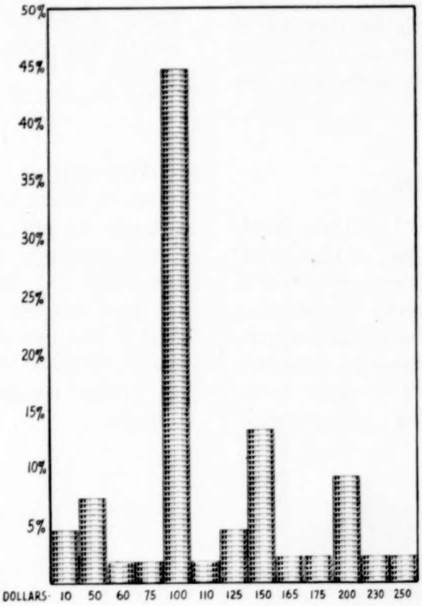

Fig. 1 TUITION &/or REGISTRATION FEE

Seventeen per cent of the schools having a 12 months course definitely plan to lengthen it, and 7% indicated that there would probably be a change this year. Most of the schools expect to change to an 18 months course. It seems likely that about 48% of the courses will be longer than 12 months by the end of 1956.

The increase in the length of the course has been a gradual one. Prior to 1939 it was 4 months. From 1939 to August 31, 1947, the minimum length of the course was 6 months; from September 1, 1947 to December 31, 1950, 8 months; and since January 1, 1951, it has been 12 months. This change has been the trend within the schools, and changes in the minimum requirements have followed rather than forced the change. For instance, by January, 1951, about 85% of the schools had already lengthened their course to 12 months. If the present trend toward a longer course continues, it seems logical to assume that the minimum requirement will be increased; however, the increase will occur only after the majority of the schools have changed and ample time has been given to the other schools to increase the duration of the course.

TUITION AND/OR REGISTRATION FEE

Tuition and/or registration fees, which range from $10 to $250, are collected by 52% of the schools. There does not seem to be a positive correlation between the length of the course and the fee as only 50% of the longer courses require one or the other. Figure 1, using the number of schools charging a fee as 100%, indicates the per cent collecting the various amounts.

STIPENDS

Sixty-two per cent of all the schools pay a stipend, 9.5% pay salary (civil service and armed forces) and 28.5% do not allow a stipend. Eighty-five per cent of the schools having the longer courses pay stipends. Amounts vary greatly. Figures 2 and 3 represent the amounts of monthly stipends. Where two figures are given, it indicates the minimum and maximum amounts in a graded scale.

MAINTENANCE

Complete maintenance	65.9%
Board and room only	2.3
Board and laundry only	7.9
Board only	3.4
Laundry only	2.3
No maintenance	18.2

All of the schools in the last three categories give stipends. Only one of these stipends is below $50 per month and 22% are below $100 per month.

BOOKS

Although it is recommended in most of these schools, 11.8% of the schools do not require that the students purchase any texts. Books are furnished for the students in 12.8% of the schools and the remaining 75.4% require that the students buy books. Figure 4 shows the number of books required by the various schools.

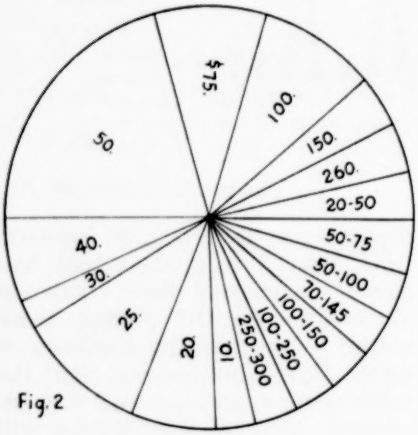

Fig. 2

STIPENDS IN 12 MONTH COURSES

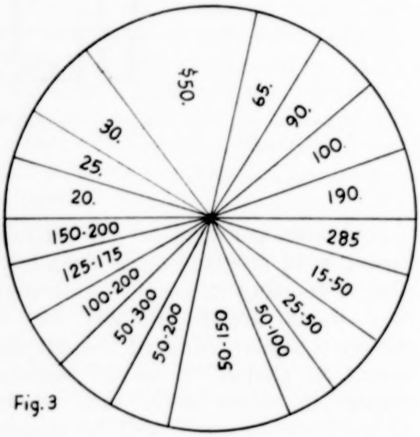

Fig. 3

STIPENDS IN COURSES OF MORE THAN 12 MONTHS

NUMBER OF STUDENTS

The questionnaires indicate that there are about 835 students enrolled in approved schools of anesthesia for nurses. Figure 5 indicates the size of the student body in our schools.

COLLEGE STATUS OF FACULTY

Either the nurse director and/or one or more members of the nurses teaching in the school of anesthesia have a bachelor's degree in 37.6% of the schools. This is an appreciably greater per cent than the 14% college graduates found in the membership at large.

AN "AVERAGE" SCHOOL

As may be seen from these figures, it is quite difficult to determine the answer to the question "What does the average school do?" On the basis of the preceding information, however, it might be possible to assume that the average school would be as follows:

Length of course—12 months (possibly changing to 18 months)
Tuition—$120
Stipend—$75
Maintenance—Complete
Books—Each student buys 5 at a total cost of $38.52.
Student body—5 or 6 (This is a median, not a mean average.)

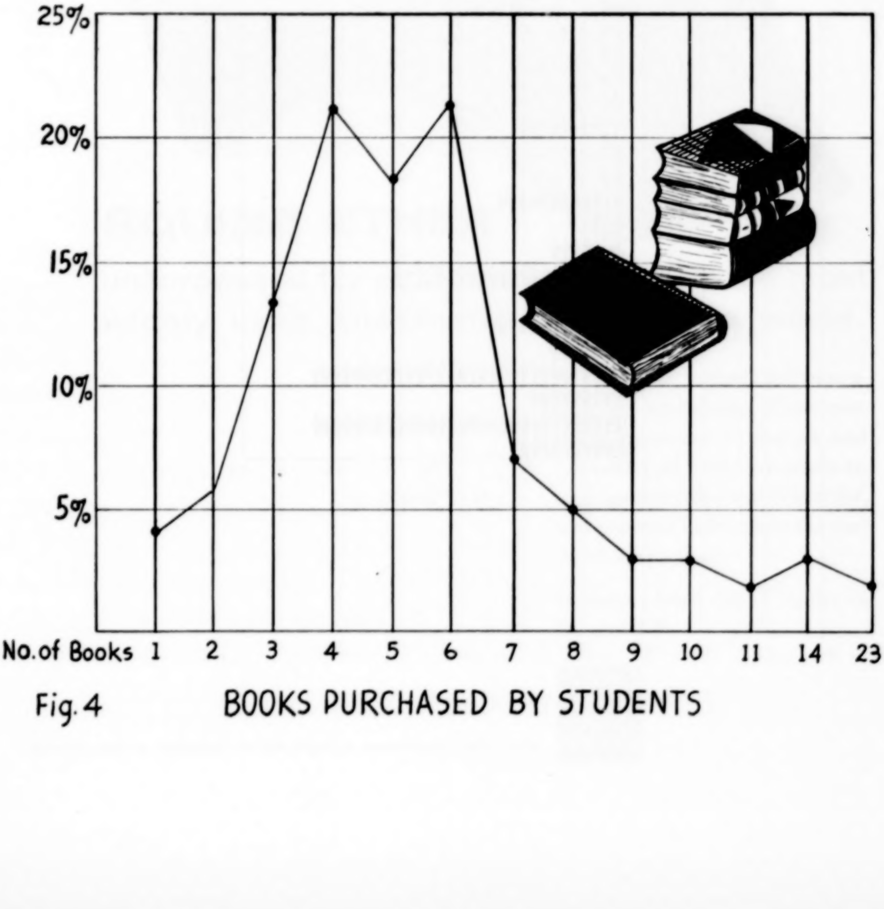

Fig. 4 BOOKS PURCHASED BY STUDENTS

Conclusion

The facets of the training program, with the exception of the length of the course, covered by this survey are not controlled in any way by the accrediting program, nor does this report imply that uniformity of such policies would necessarily be beneficial. In fact, by providing a variety of policies from which the prospective student may select, the schools are better able to meet the diverse needs of future anesthetists.

This survey should not be construed as an evaluation of the quality of training received in the schools. There is not now, nor has there ever been any attempt to rank the schools in order of their efficiency in performing the task of training nurse anesthetists. It is felt that any school that conscientiously maintains the standards set up by the AANA will provide excellent training for the nurse anesthetist.

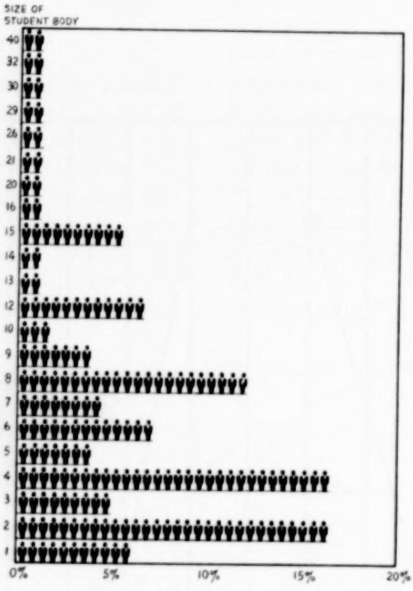

Fig 5 SIZE OF SCHOOLS

RELIABILITY
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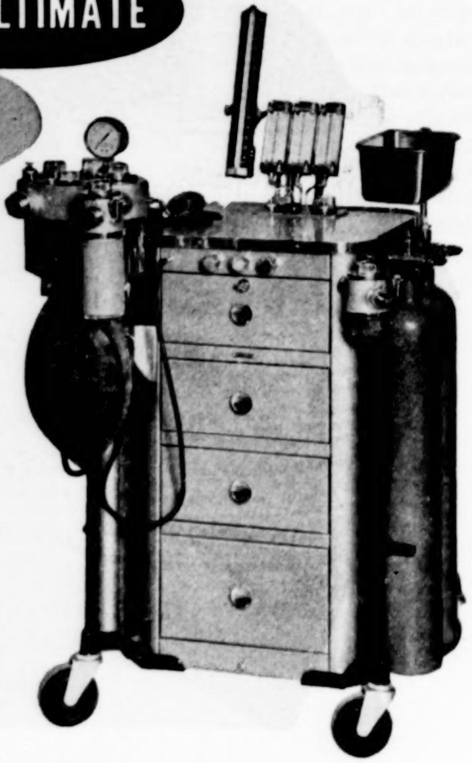

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Legislation

Emanuel Hayt, LLB., Counsel, A.A.N.A.

FAILURE TO EXPLAIN OPERATIVE CONSENT AND MAKE BIOPSY HELD MALPRACTICE.—Plaintiff sued defendant for the unauthorized and unnecessary amputation of her right breast, alleging that the operation was contrary to her desire and consent and without making an appropriate diagnosis to ascertain presence of malignancy therein, it appearing from a postoperative pathological analysis that there was no malignancy. After the plaintiff had completed and presentation of her evidence, the court granted a motion for involuntary dismissal on the ground that upon the facts and the law the plaintiff had failed to prove a sufficient case for the jury.

The issue was narrowed to the question whether the jury could have found from the evidence presented by the plaintiff and the inferences reasonably to be drawn therefrom (1) that defendant had performed the operation without her consent and contrary to her instructions, and (2) that the defendant had been negligent in failing to make a biopsy or obtain a pathological examination of the tissue from plaintiff's breast before proceeding with a radical operation.

It appears that the patient had signed a document which reads as follows: "I hereby give my consent to James B. French, M.D., to perform an operation for mastectomy and hemorrhoidectomy upon myself, and to do whatever may be deemed necessary in his judgment." It was witnessed by her husband and a hospital nurse.

Plaintiff's theory of this issue is, first, that when she signed the written consent to the operation she had never heard and did not know the meaning of the word mastectomy, and, secondly, that in any event she clearly and unmistakably made known to the defendant that he was just to make a test of the breast and that his answers showed that he completely understood such instructions.

The record does not indicate that plaintiff was advised at any time by defendant that what he said was the "standard procedure" in the area, was to perform a radical mastectomy without a determination of malignancy through a biopsy, or that there was no pathologist in the area by whom a pathological analysis of the tissue might be made.

Commenting on the evidence, the court said: "For over two generations pathologists and other medical men have been writing treatises on the pathological analysis of tissues for the diagnosis of cancer, and general practitioners have been sending their patients with symptoms of the disease to specialists. 'What everybody knows the court must know.' And this knowledge might well permit a jury to peer beneath the cloak of protection thrown about the defendant by the testimony that his diagnosis and treatment were in accordance with the standards of the profession in his community.

"We are convinced, first, that the jury's consideration of the use of (or the failure to make use of) the pathological analysis of the tissue, in a proper case, for the purpose of diagnosis, must take its place beside the jury's consideration of the use of (or the failure to make use of) the X-ray in a proper case, and, secondly, that a jury has a right to take this into consideration in its own common knowledge and experience and without the assistance of expert testimony —the knowledge concisely expressed, that microscopic diagnosis is the *sine qua non* of neoplastic disease. It is the only means of absolutely establishing the true nature of the disease.

"For the reasons given, we conclude that the order granting the motion for involuntary dismissal was error, and that the judgment must be reversed and the case remanded for a new trial."

(Corn V. French, 5 C.C.H. Neg. Cases 2d 356—Nev.)

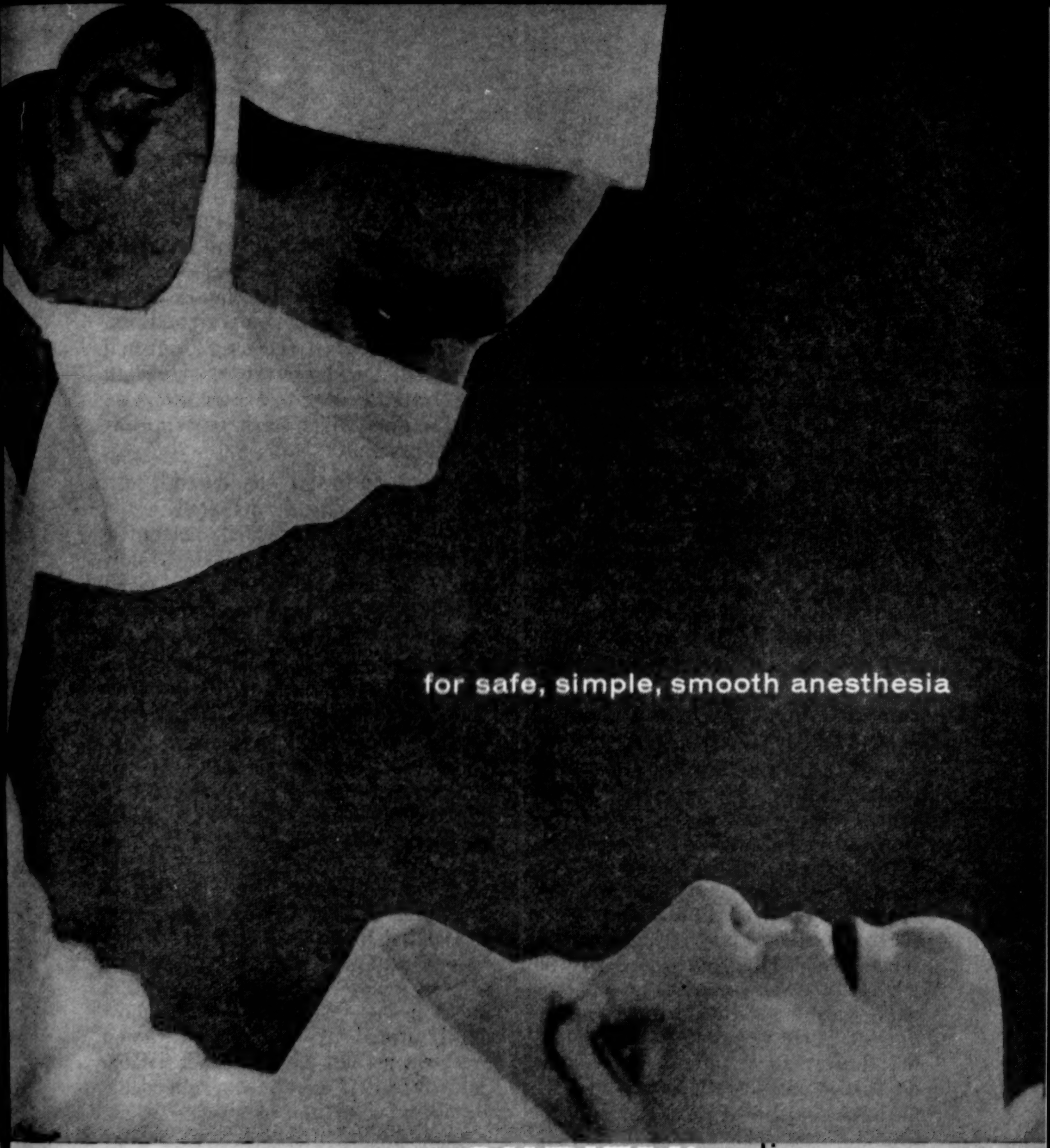
SLIPPING OF TRANSFUSION NEEDLE OUT OF VEIN IMPOSES LIABILITY ON HOSPITAL.—The patient entered the hospital for the purpose of a hysterectomy and was operated upon by her private physician, assisted by a medical anesthetist and two assistant surgeons, and the usual scrub and surgical nurses. Because of loss of blood and shock the anesthetist started transfusion of one pint of whole blood. To do this he inserted a needle into the vein of the right arm, fixed it in place by pieces of adhesive tape, then placed the arm on a board and held it there by use of adhesive tape or a towel.

After the operation the patient was taken to her room, when the doctors checked and found the transfusion still running. The operating surgeon instructed the nurse who was left in charge to watch the blood pressure. He expected the nurse to remain there as long as the blood was dripping; the patient's condition was not critical and he did not expect her to come out of the anesthetic for a couple of hours. At this time she probably had received about half of the blood in the bottle.

The needle came out of the vein, but the surgeon was not called until some hours later, when he found the patient's arm swollen and discolored. The needle coming out of the vein caused about 200 cc's of blood to go into the soft tissues.

Suit was brought by the patient solely for the injury to her arm. At the trial the physicians testified it was standard practice for the surgeon to leave a patient with blood transfusion running and in charge of a nurse. All three doctors testified that it was a frequent occurrence for a needle to come out of the vein during a transfusion. Usually when the needle comes out the blood does not flow into the tissues; that it is rare when it does and then only flows from 10 to 25 cc's. There was no testimony to the contrary of these statements.

The patient asserted that the operating surgeon was responsible for the acts of the nurse, basing her contention on the rule that a physician is answerable for the acts of another, operating jointly, for the acts and omissions of the other which, exercising reasonable diligence, he should have observed. The same rule would apply to nurses working under his direction. However, this rule does not operate against the physician when



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PARKE, DAVIS & COMPANY DETROIT, MICHIGAN the accident is caused by an agency or instrumentality not within his exclusive control.

In this case, the surgeon, finding that the transfusion was working properly in accordance with good medical practice, left the patient in the hands of a registered nurse provided by the hospital. He had the right to assume that being a registered nurse and provided by the hospital she had the requisite training and knowledge to perform the simple act of watching the transfusion and seeing that if the needle slipped as needles frequently did, the dripping of blood was stopped and a doctor called to again insert the needle. Thus, at the time of the injury, the surgeon did not have exclusive or any control of the instrumentality. It is true that the surgeon was in charge of the patient and generally of the nurses who attended her, but not to the extent of responsibility for routine matters performed in his absence by a nurse not selected by him but provided by the hospital. To hold him so responsible would require him to remain with the patient until the transfusion was complete in order to make sure that the nurse, whom he did not select, properly performed her duties. To require a surgeon to do this, a matter which did not require the skill of a physician or surgeon, would be so time-consuming as to make the already burdensome cost of medical treatment almost prohibitive.

A different situation from that in the case against the surgeon is found in that against the hospital because (a) the doctrine of res ipsa loquitur would apply against it and (b) there was evidence of negligence on the part of its employees. The hospital took the position that because it is quite a common occurrence for transfusion needles to come out of the veins, res ipsa loquitur cannot apply here. Such contention overlooked the evidence that such a common occurrence does not result in the condition of patient's arm. It is that unusual result that causes the doctrine to apply and to require explanation; an explanation which does not appear in the case.

The nurse, after the doctors left, felt that the blood was flowing too slowly so the nurse shook the bottle a couple of times to make it flow faster. As no explanation was given of this action a reasonable inference therefrom could be that this was the reason such an unusual quantity of blood entered the soft tissue after the needle came out of the vein. Again, when the needle came out, there was considerable delay in the nurse answering the bell. Finally a nurse arrived and a little while afterwards a doctor came. A reasonable inference is that during this long delay the blood was continuing to drip into the soft tissue causing the unusual damage, and that the delay was a negligent one.

The action against the operating surgeon was dismissed, but the hospital, owned by one Taylor, doing business as San Rafael General Hospital was held guilty of negligence.

(Sherman v. Hartman, 290 P. 2d 894—Calif.)

NOTICE BY NURSE TO ONE HOSPITAL HELD BINDING ON CO-EMPLOYER HOSPITAL AS TO COMPENSATION DISABILITY.—Claimant, a nurse, was, by the award here appealed from, allowed workmen's compensation because of disability from pulmonary tuberculosis contracted at Buffalo General Hospital while claimant was in training there, in 1945 and 1946, as a student nurse. Claimant, in 1943, had, as a student, entered Children's Hospital School of Nursing, another Buffalo institution, but in 1945 she was sent, for part of her training, to Buffalo General Hospital. It was not until after her return to, and later graduation from, Children's Hospital that the disease and disablement were discovered. The board properly found that the disablement occurred at Buffalo General Hospital, that the disease was contracted by reason of contact with a tubercular patient there, that it was due to the nature of her employment there, and that, at that time, Children's Hospital was her "general employer" and Buffalo General Hospital was her "special employer". The board made its award against the special employer only. Although claimant had not filed a claim against that special employer within the two year period fixed by section 28 of the Workmen's Compensation Law, McK. Consol. Laws, c. 67, the general employer (Children's Hospital) had, within that time, made an "advance payment" of compensation to claimant in the form of medical treatment and hospital care. The board held that "such advance payment is binding on the Buffalo General Hospital, the special employer, as well."

It is not disputed that the furnishing of medical care to an injured employee is, ordinarily, such an "advance payment" of compensation as makes unnecessary the filing by him of a formal claim.

But appellants here, pointing out that claimant's hospital care after she became disabled was provided not by appellant Buffalo General Hospital, but by Children's Hospital, insist that it may not serve as a substitute for the filing of a claim against that appellant.

In Workmen's Compensation Law, as at common law, "The fact that a workman has a general and a special employer is not inconsistent with the relation of employer and employee between both of them and himself." Both together are his employer, and notice to one, or claim against one, or advance payment by one, stops the running of section 28 time limitation as to both.

Judge Van Voorhis dissented that the record is barren of any evidence that the special employer, appellant Buffalo General Hospital, was made aware of the fact that a claim was to be made against it, or that it was apprised of the nature of such claim, or that it did anything tending to cause claimant to delay making a claim, or to authorize claimant's general employer to act for it in making the advance payment of compensation. It is irrelevant whether appellant sustained prejudice on account of the delay in filing this claim. Prejudice does not enter into whether a claim is barred by the Statute of Limitations.

"The order of the Appellate Division affirming the award and decision of the Workmen's Compensation Board against appellant Buffalo General Hospital, the special employer, should be reversed and the claim against appellants should be dismissed."

(Cook v. Buffalo General Hospital 127 N.E. 2d 66,69)

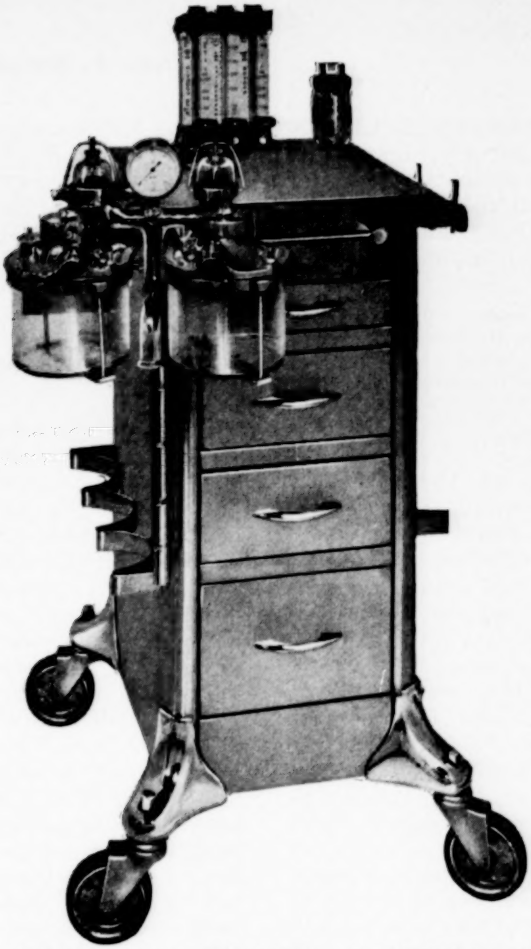
Abstracts

McCrory, C. B. and Virtue, R. W.: Comparative effects of anesthetic agents on incidence of ventricular fibrillation during hypothermia. Proc. Soc. Exper. Biol. & Med. 90:327-329 (Nov.) 1955.

"Cardiac ventricular fibrillation and asystole are two factors which have produced a limit for experimental and clinical hypothermic procedures. Fibrillation has generally occurred at higher temperatures than asystole. Elimination of factors which tend to cause fibrillation might therefore permit the use of lower temperatures for such procedures. Choice of anesthetic agent is conceivably involved in the production of fibrillation. Available data are on the whole inconclusive as to the role that various anesthetic agents play .... It therefore seemed desirable to study the effects of commonly used agents, ether, cyclopropane and pentobarbital with regard to their effect on production of ventricular fibrillation or asystole during hypothermic anesthesia. . . The terminal cardiac events of 31 hypothermic dogs, 6 to 12 months old, were observed. Eleven animals received cyclopropane and 10 each received ether and pentobarbital sodium as the pre-hypothermic anesthetic agents. All animals were hyperventilated with oxygen after intubation until the experiments were terminated. Rectal temperatures were continuously observed and electrocardiograms were taken at frequent intervals as the dogs were cooled until cardiac activity ceased. No surgical procedures were carried out. Eight of 11 animals receiving cyclopropane, 2 of 10 receiving ether, and none of 10 receiving pentobarbital died in ventricular fibrillation. The mean rectal temperature of animals on cyclopropane or ether dying of ventricular fibrillation was 19° C. The mean rectal temperatures of all the deaths after the use of cyclopropane was 16.7°, after ether, 13.4°, and after pentobarbital sodium, 11.3°."

Norman, David and Hiestand, W. A.: Glycemic effects of chlorpromazine in the mouse, hamster and rat. Proc. Soc. Exper. Biol. & Med. 90:89-91 (Oct.) 1955.

"Various pharmacological effects of chlorpromazine (CPZ) have been reported in the literature among which are depression of body temperature, potentiation of morphine and barbiturates, anti-epinephrine as well as antiacetylcholine action, and a depression of cellular activity or narcobiosis .... In view of the various profound effects on the nervous system and cellular activity, the question arose as to the possible effects on blood sugar levels during the post-injection period when this substance is pharmacologically most active .... The glycemis effects of chlorpromazine were studied in the mouse, hamster and rat. A hyperglycemic response was found in the mouse and hamster with the mouse having the greater response of the two. No significant glycemic change was observed in the rat. An exacerbation of the diabetic state and decrease in survival time was found in alloxan



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diabetic mice treated with CPZ. A protection from hypoglycemic convulsions and death produced by insulin was afforded to mice which had been injected with CPZ 2 hours previous to the injection of insulin."

P'an, S. Y., Gardocki, J. F., Hutcheon, D. E., Rudel, H., Kodet, M. J. and Laubach, G. D.: General anesthetic and other pharmacological properties of a soluble steroid, 21-hydroxypregnanedione sodium succinate. J. Pharmacol. & Exper. Therap. 115:432-441 (Dec.) 1955.

"Recent work by Laubach, P'an and Rudel has demonstrated that 21-hydroxypregnanedione sodium succinate (P-55, hydroxydione or Viadril), a soluble steroid, possesses pronounced central nervous system depressant effects in laboratory animals. The present communication reports the results of further pharmacological studies on this steroid .... Hydroxydione is a soluble steroid which had pronounced central nervous system depressant action in a number of species of animals including mice, rats, rabbits, dogs and monkeys. It could be administered intravenously or orally to induce a state of surgical anesthesia in which the animal could be operated upon without the use of analgesics. The onset of anesthesia was smooth and recovery rapid. The duration of anesthesia varied with the dosage given. Hydroxydione did not appear to cause as much cardiac or respiratory depression as the ultrashort acting thiobarbiturates. It had a very low acute toxicity, resulting in a therapeutic index considerably greater than that of thiopental sodium. The therapeutic indices of hydroxydione by intravenous injection in mice, rats and rabbits are 11.6, 7.8 and 6.3, respectively. Because of the wide range of safety and minimal respiratory and cardiac depression, hydroxydione has promise of superiority over the ultrashort acting thiobarbiturates for clinical applications in basal or general anesthesia."

de Boer, C. H.: The aetiology of post-partum haemorrhage. Brit. M.J. 2:1187-1189 (Nov. 12) 1955.

"Post-partum haemorrhage as a cause of maternal mortality has assumed more prominence of recent years owing to the reduction in deaths from other causes .... At the London Hospital most of the normal deliveries are conducted by medical students under the supervision of the midwives and residents .... In this series of 2,444 patients there were 405 with a post-partum haemorrhage —an overall incidence of 16.5%. Prolonged labour and operative delivery under anaesthesia were not infrequently associated, but for the patients delivered by forceps, the majority under general anaesthesia, there was a post-partum haemorrhage rate of 19.6%. Labours prolonged more than 30 hours were associated with a rate of 2.7% .... Overdistension of the uterus as a factor has been over-emphasized. Neither accidental nor unavoidable ante-partum haemorrhage predisposes to P.P.H. Fibroids rarely cause haemorrhage, but when responsible the haemorrhage is severe. Severe post-partum haemorrhage is apt to recur in subsequent pregnancies, and is possibly due to abnormal adherence of the placenta. Previous post-partum haemorrhage should be an indication for hospital confinement."

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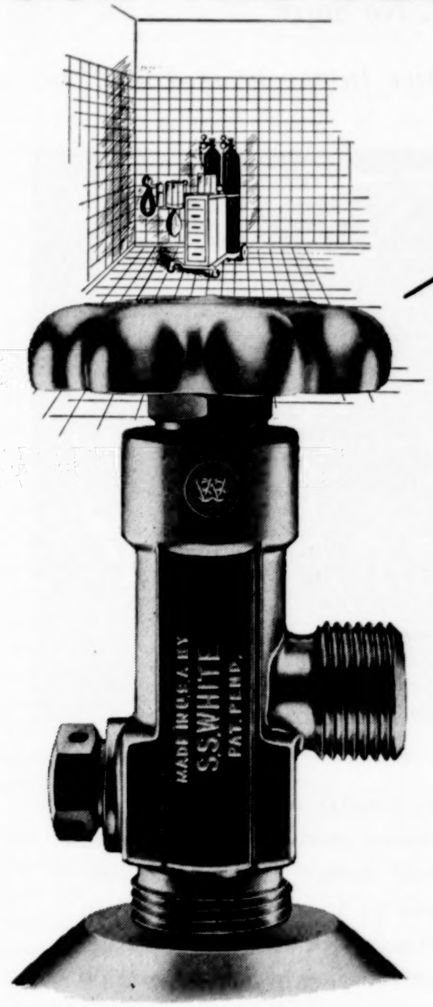

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Lambie, R. S. and Pfaff, Frank: The use of succinylcholine during endotracheal extubation. Anesthesiology. **17**:47-59 (Jan.) 1956.

"The presence of muscular tone is the common causative factor of the complications of endotracheal extubation. It is generally agreed that extubation should be performed in light planes of anesthesia to reduce the time that the patient is without his protective laryngeal and pharyngeal reflexes. These reflexes, however, can be detrimental to the patient at the time of extubation . . . . It was thought feasible to study endotracheal extubation with the use of succinylcholine to abolish muscular tone in an effort to circumvent the complications . . . . The apneic dose of succinylcholine was administered prior to endotracheal extubation to insure a short period of profound muscle relaxation. No bucking can occur during this apnea, but full oxygen saturation can easily be maintained with artificial respiration. Thirty-six patients were studied, 20 of whom received succinylcholine, the remainder serving as controls . . . .

"With the use of succinylcholine, the decrease in oxygen saturation during extubation is minimal. Without the use of succinylcholine, the average fall in oxygen saturation is greater and there is a greater variation in the degree of hypoxia. The pressor reflexes of intubation were found to be similar to those of intubation. No correlation. was found between these reflexes and the decrease in oxygen saturation. Electrocardiographic changes other than sinus tachycardia were found to be related to decreases in oxygen saturation of 10 per cent or more. These cases all occurred in the control series and all the patients exhibited bucking. This study demonstrates objectively that short periods of subclinical hypoxia can be associated with transient electrocardiographic changes. Others have shown that bucking can increase the cerebrospinal fluid pressure, and this technique is suggested to minimize this occurrence in neurosurgical cases. A thorough toilet of the supralaryngeal region can be performed under direct vision during the period of apnea. This prevents postoperative pulmonary complications due to the aspiration of foreign material with the first inspiration following removal of the tube. The function of the vocal cords can be determined in thyroid operations by direct laryngoscopic examination when spontaneous respirations have returned but general muscular tone is still diminished. Postoperative sore throat is minimized with this technique."

Dripps, R. D., Vandam, L. D., Pierce, E. C., Oec, S. R. and Lurie, A. A.: The use of chlorpromazine in anesthesia and surgery. Ann. Surg. **142**:774-785 (Nov.) 1955.

"The theoretic advantages of chlorpromazine for peroperative medication include sedation, muscarinic blocking action (drying effect), reduction of nausea and vomiting during and after operation, reduction of the amount of anesthetic drugs required, and protection against cardiac arrhythmias and shock . . . . As a substitute for preoperative medication chlorpromazine failed to block salivary secretion. The sedation produced was of an extraordinary nature, and perhaps not suited for routine purposes. The disadvantages were pain on intramuscular injection, residual soreness at the injection site, and a tendency to produce arterial hypotension refractory to treatment, and particularly hypotension of a postural nature. A good effect but by no means a universally certain one was obtained with chlorpromazine in the treatment of nausea and vomiting of several types. Vomiting of a neurologic nature, associated with the direct action of anesthetics on the central nervous system, was not alleviated. Chlorpromazine, probably by virtue of an action on the higher brain centers, was valuable in the treatment of exitement or delirium on emergence from anesthesia. Chlorpromazine did not prolong the duration of spinal anesthesia."

Knocker, Phyllis: Effects of experimental hypothermia on vital organs. Lancet **2**:837-840 (Oct. 22) 1955.

"For well over a hundred years experimentalists have studied the effects of cold upon the body . . . . The present investigation was undertaken to determine whether any histochemical changes during hypothermia could be demonstrated. As being most likely to show such changes, the vital organs studied were the liver, the kidney, and the adrenal glands . . . . 30 dogs of either sex were used, 8 of them acting as controls . . . . When hypothermia is induced in dogs, histopathological changes take place in vital organs. These changes are seen even when the animals are not cooled beyond the point generally regarded as ideal for surgery. The tissue changes seen in liver, kidneys, and adrenal glands are such as to make it questionable whether hypothermia ought to be used as a means of enabling patients to withstand circulatory arrest during operations on the heart. The cell changes resulting from hypothermia closely resemble those reported by other workers as resulting from various forms of stress, and are perhaps attributable to tissue anoxia. If, as seems likely, they may readily become irreversible, this would account for some hitherto unexplained deaths of animals during experimental hypothermia."

Lahti, R. E., Brill, I. C. and McCawley, E. L.: The effect of methoxamine hydrochloride (vasoxyl) on cardiac rhythm. J. Pharmacol. & Exper. Therap. **115**:268-274 (Nov.) 1955.

"We have examined the effects of methoxamine, using dogs with various types of experimentally produced myocardial stress or damage in order to simulate as closely as possible some of the clinical cardiac diseases. In addition, experimental evidence has been obtained to determine whether methoxamine's bradycardia would or would not progress to heart block or arrhythmia on overdosage. . . In animals whose hearts were made susceptible to cardiac arrhythmias, methoxamine failed to provoke such arrhythmias. The experimental techniques used included cyclopropane or chloroform sensitization, myocardial infarcts and diphtheria toxin myocarditis. Methoxamine, moreover, prevented epinephrine-cyclopropane or epinephrine-chloroform ventricular tachycardia and ventricular fibrillation. Methoxamine causes slowing of the heart rate and, on overdosage, sinus pauses and brief periods of AV nodal rhythm. At lethal doses of methoxamine, when death occurs from respiratory arrest, cardiac action is still maintained satisfactorily. Methoxamine's pressor effects appear to be due to increased peripheral resistance, and there was no evidence of direct myocardial stimulation."

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It has been said that the difference between an old woman and an elderly lady is income. When retirement time comes, whether *we have* or *we have not* depends entirely upon the choice we made during our productive years. Few people realize how much of a fortune they actually earn throughout a lifetime of working, and fewer still, realize the need for creating a savings program that will enable them to maintain a standard of living above the bare necessities of life when they retire.

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A well-planned Retirement Income Savings Program aimed at supplementing Social Security Benefits means the difference between a meager retirement and a retirement that will provide you with enough income to do the things you plan and hope to do when you no longer have to work. Procrastination, more than anything else, is the cause of financial dependency in old age. It took Federal Legislation to force millions of people to realize that retirement income has to be provided for during the productive years of the individual's life.

We like to think of statistics as applying to everyone but ourselves. Statistics reveal that the chances of the aged and the retired of overcoming financial dependency are 50 to 1 against it. These are not the kind of odds that any sane person would care to gamble against.

Not all people who reach retirement age dependent entirely upon Social Security and relatives do so because of failure to have made some additional provision for their old age. Many of them had investments upon which they'd been counting; but stocks and bonds—even real estate, fluctuate drastically in value through the years. Lacking the guarantee of a specified value in either long term or short term periods, they are poor investments for retirement.

The individual investor cannot possibly place his savings over a wide enough "spread of risk" to achieve the stability of investment that life insurance companies accomplish. Security of investment can only be achieved through wide-spread holdings that are great enough to recover from one source the losses which may be incurred through another source. No single investor has enough money to accomplish that security of investment, and it is for this reason that retirement income savings through life insurance alone affords a guaranteed retirement income upon which the policyholder can depend. It is also the only form of investment that has as yet been devised with an absolute guarantee of a lifetime income you cannot outlive.

"My only regret . . ."

There is hardly a life insurance company that does not have in its files countless numbers of letters from retired policyholders who have written these words, "My only regret is that I did not take more of this insurance." Too many people while they are young and working give little thought to old-age security. They save some of their earnings which they put into Government Bonds and bank accounts. In time, the stock market begins to appeal to them, and, outside of discovering oil or uranium on your property, it's about the only way you can make a fortune without earning it—if you are lucky. As far as the stock market is concerned, so long as you are on the going up side you're all right, but don't get caught on the going down side if what you have invested is the funds you are counting on for your retirement years.

Government bonds are as safe as life insurance, but unlike life insurance annuities they are exhaustible.

A bank account is like money in the pocket and like the pocket it has a way of getting holes in it. Bank accounts are too accessible. So long as the depositor is not contemplating the purchase of a new car, TV, a trip abroad or an extended vacation tour, the deposits are sometimes fairly well kept up. Check your deposits against the withdrawals shown in your bank book; then try to calculate the total deposited fund you think you will have by the time you reach age 60 or 65, based on your habit of drawing out and spending what you save from time to time. Your habits will not change, and the more you make the more you'll spend so your deposits and withdrawals will simply be in larger amounts. Life insurance companies know that, and because of it, annuities and retirement plans were created by life insurance companies.

Life insurance statistics reveal that women policyholders are way ahead of men in life insurance retention. Women are less inclined to speculate with their savings, and they prefer to operate on the investment philosophy that says, "A bird in the hand is worth two in the bush."

Most women do not have dependents, therefore they feel freer to invest in annuity plans, but in many instances women wish to provide life insurance benefits for parents or close relatives, in the event of their premature death. Retirement income plans which add life insurance to the annuity factor make this possible.

Knowing this, your Association has approved and endorsed the special Retirement Program now available to you, giving you the choice of the straight annuity plan or retirement income plan which includes life insurance.

This program was specifically designed for members of the American Association of Nurse Anesthetists, and it is available to members only. While the AANA is vitally interested in the financial security of its members, it cannot compel them to be so concerned themselves, nor can it provide for them the actual savings funds needed for that security.

It is well to remember that all through your working years you are supporting two people: the productive *you* while you are working, and the unproductive *you* when you retire. By the time you reach retirement age, all that will be there will be what you send ahead now.

A bird in the hand is worth two in the bush. How much better it is to be able to say, when you retire, "I only regret that I did not take out more of this," than to have to say, "I'd have something now if my investments hadn't failed!"

Let the life insurance company, with its much greater shock-absorbers, guarantee your savings for retirement. It is the only investment organization that can do that for you, and it is the only investment organization that will pay you a guaranteed non-fluctuating income for the rest of your life, beginning the day you retire.

As little as $10.00 a month will start you on the road in the AANA Retirement Program.

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Book Reviews

A Review of Nursing. By Helen F. Hansen, R.N., M.A. Formerly Instructor, California Lutheran Hospital, Los Angeles; Educational Director, University of California School of Nursing, San Francisco; Inspector, Schools of Nursing, State Department of Public Health, California; Assistant Director, Mount Sinai School of Nursing, New York City; Chief, Bureau of Registration of Nurses, California; Executive Secretary, Board of Nurse Examiners, California; Director, Sacramento Junior College School of Nursing, Sacramento. Cloth. 758 pages. Philadelphia and London: W. B. Saunders Company, 1956. $5.75.

This eighth edition of the Review of Nursing follows the style of previous editions. However, most of the outlines have been completely rewritten. Each chapter covering a subject necessary to nurses' training is followed by an extensive list of questions. The answers to the questions are given in an appendix. The book is throughly indexed and should continue to serve as it has in the past as a useful reference for teachers. It will also be useful to students in helping them organize material and review basic nursing subjects.

Thresholds To Professional Nursing Practice. By Frances M. McKenna, R.N., M.A. Dear, School of Nursing, Professor of Nursing, Baylor University, Waco, Texas; Formerly Director, Department of Nursing, Professor of Nursing, North western State College, Natchitoches, Louisiana; Director, Nursing Education, Associate Professor of Nursing, Ohio State University, Columbus, Ohio. Cloth. 374 pages, 4 illustrations. Philadelphia and London: W. B. Saunders Company, 1955. $4.25.

For graduate nurses, and especially those who have recently entered the profession, this book will serve as a useful guide to adjustments. The author has emphasized the employment opportunities and adjustments, various branches of nursing service for graduates, economic considerations and legal responsibilities. The AANA is not mentioned, either in the listing of professional organizations nor is its Journal listed in the professional journals. There are two and one-half pages on the nurse anesthetist, including such statements as "In situations where there is a department of anesthesia headed by a medical anesthesiologist he will employ, direct and be legally responsible for the performance of the nurse anesthetist .... In some situations nurse anesthetists serve a buffer purpose on behalf of the hospital, assuming responsibility for assignments not preempted by doctors, together with delivery room, night and emergency calls. Even so, the work is attractive in that it holds challenge and demands constant alertness and attention ...." In spite of this unattractive presentation of the specialty of anesthesia by nurses, there is much of value for members of this association who are first registered professional nurses.

"Controlled Hypotension" in Anesthesia and Surgery. By David M. Little, Jr., M.D. Department of Anesthesiology, Hartford Hospital, Formerly, Attending Anesthesiologist Grace-New Haven Community Hospital, Assistant Clinical Professor of Anesthesiology Yale University School of Medicine. Cloth. 159 pages, 14 illustrations, 18 tables. Springfield, Illinois: Charles C. Thomas, 1956. $4.50

With an ever increasing interest in the problem of radical surgery, this monograph on Controlled Hypotension presents much of the present thinking on the control of bleeding during surgery by induced hypotension. The use of drugs, posture, ganglionic blockade and anesthesia are presented with case reports to illustrate the various points. An extensive bibliography occupies 29 pages of the text, more than 500 references being given. Authors to whose work the author of this monograph makes reference are acknowledged in the author index. A subject index is also included.

PHARMACOLOGY IN MEDICINE. By Victor A. Drill, Ph.D., M.D., Editor. Lecturer in Pharmacology, Northwestern University Medical School; formerly Professor of Pharmacology, Wayne University College of Medicine. Cloth. 87 chapters, individually paged. New York. McGraw-Hill Book Co., Inc., 1954 $19.50.

The collaborative effort of 81 experts has contributed to this vast volume. Unlike many books on this subject, each chapter contains not only the factual data but also a personal evaluation of the subject by the author of the specific chapter. For a reviewer to pretend to have read any great part of so mammoth a collection of material would tax the credulity of the reader. However, the names of the authors alone encourage more extensive exploration. The Introductory Chapter 1: Historical Background and General Principles of Drug Action sets a high goal for the authors of subsequent chapters. The first ten parts of the book and the fifteenth section will be of greatest interest to anesthetists; each of these sections treating of drugs which are in common or special use by anesthetists. Although each chapter has separate pagination, the book is thoroughly indexed and the material is readily located.

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[1] Hingson, R.A., Davis, H.S., Inman, C.E., and LeLievre, R.E.: Am. Pract. 6:1004 (July) 1955

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NURSE ANESTHETIST: Openings available now. Salary range $4050-$5170. 1000 bed public general, teaching hospital. Write: Superintendent, Edward J. Meyer Memorial Hospital, 462 Grider Street, Buffalo 15, N. Y.

POSITION WANTED: Registered Nurse Anesthetist, age 28. Two years' experience, 700 bed hospital. Desires position in surgical field of anesthesia. Experience: all types of major surgery including neuro and thoracic surgery. OB call acceptable on rotating basis. Prefer to work with anesthesiologist. Desire location in western or southwestern states. Salary open. Will be available in early fall. Write: Box M-34, Journal of American Association of Nurse Anesthetists, 116 South Michigan Avenue, Chicago 3, Illinois.

NURSE ANESTHETIST: Starting salary $405 per month for AANA members; $375 per month if eligible for membership. Annual increases plus laundry and private room with bath and telephone in new women's residence. Social Security and Pension Plan. 40 hour week including full time credit for first call. Second call paid for cases done. Six paid holidays, 30 days vacation annually and liberal sick leave policy. Apply: Marshall Kerry, M.D., Chief, Anesthesiology, The Reading Hospital, Reading, Pa.

WANTED: Nurse anesthetist for 50 bed general hospital in Southeast Arkansas. Monthly salary $500 plus room in new nurses' residence and meals. Write, giving references, to: Box M-33, Journal of American Association of Nurse Anesthetists, 116 South Michigan Avenue, Chicago 3, Illinois.

WANTED: Nurse Anesthetist for new small general hospital, southeastern Washington. No OB call. Usual benefits. Salary open. Write: Mr. T. J. Corkery, Administrator, Kennewick General Hospital, Kennewick, Wash.

WANTED: Nurse Anesthetist for 800 bed teaching hospital. Staff of 6 Anesthesiologists, 1 Fellow, 4 Residents, and 9 Nurse Anesthetists. Salary range $4,920 to $6,144 annually with merit rating increases, one month paid vacation, 15 days sick leave annually which can accumulate to 90 days; only emergency operations on Saturdays and Sundays. Please reply to: Mrs. Geneva R. Watkins, Head Nurse Anesthetist, Anesthesia Dept., Medical College of Virginia, Richmond 19, Virginia. State age, qualifications, and school of anesthesia.

NURSE ANESTHETIST: For new 236 bed general hospital 30 miles from New York City. Write stating age, training and experience. Morristown Memorial Hospital, Morristown, N. J.

NURSE ANESTHETIST: 180 bed general hospital in Hilo, Hawaii. Averaging 100 majors and 100 minors monthly. Four anesthetists on staff. Civil Service, salary $383, increases yearly to $445. For full particulars write Superintendent, Puumaile & Hilo Memorial Hospital, Hilo, Hawaii.

NURSE ANESTHETIST: Permanent position, 197 bed general hospital. Salary $4,295.20. 30 days paid vacation. Blue Cross Hospital Insurance and retirement benefits, if desired. Apply: Mrs. K. C. Dandridge, Chief Anesthetist, Meharry Medical College, Nashville, Tennessee.

NURSE ANESTHETIST: Starting salary $400 per month. Write: Hospital Administrator, St. Joseph's Mercy Hospital, Ann Arbor, Michigan.

NURSE ANESTHETIST: Modern 63 bed hospital located in the Shenandoah Valley of Virginia. Good salary and working conditions. Apply: Administrator, Stonewall Jackson Hospital, Lexington, Virginia.

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REGISTERED NURSE ANESTHETIST: 135 bed general hospital in charming southern city of 18,000 short drive from Gulf of Mexico. Well qualified surgical staff. Salary range $380-$416 per month commensurate with experience. 4-weeks vacation with pay, sick leave, 2½ day weekend every 4th week. Apply: Administrator, John D. Archbold Memorial Hospital, Thomasville, Ga.

NURSE ANESTHETIST: 211 bed general hospital, fully approved. Starting salary $450 per month. Ideal working conditions. Apply, James L. Foster, Administrator, Bluefield Sanitarium, Bluefield, West Virginia.

NURSE ANESTHETIST: 250 bed general hospital; excellent working conditions and personnel policies. Write: Mr. Bert Stajich, Assistant Administrator, Columbia Hospital, 3321 N. Maryland Avenue, Milwaukee 11, Wisconsin.

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WANTED: Nurse Supervisor-Anesthetist for small general and industrial hospital; southwest; mining community; attractive salary; excellent working conditions; supervisory experience necessary. Living quarters available. Write: Box M-18, Journal of American Association of Nurse Anesthetists, 116 South Michigan Avenue, Chicago 3, Illinois.

NURSE ANESTHETIST: AANA member to free-lance in small community serving 3 hospitals in Northern California. Pleasant working conditions. Alternate call with another nurse anesthetist. Car necessary. For further particulars write: Box M-32, Journal of American Association of Nurse Anesthetists, 116 South Michigan Avenue, Chicago 3, Illinois.

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NURSE ANESTHETIST: For 300 bed hospital near Pittsburgh. Average forty hours per week. Starting salary excellent with guaranteed yearly increases. Write details of training and experience to Administrator, Butler County Memorial Hospital, Butler, Pennsylvania.

WANTED: Nurse Anesthetist. 450 bed general hospital, fully approved. Salary open. Apply Administrator, McKeesport Hospital, 1500 Fifth Avenue, McKeesport, Pennsylvania.

NURSE ANESTHETISTS (two): For expanding services of functionally modern general hospital; separate anesthesia and recovery rooms; all types of surgery including neuro and chest. Air conditioned five-room suite. City of 95,000 in Michigan's resort area. Minimum starting salary $400 per month (five day, forty-hour week) in addition to attractive call compensation. Apply: Personnel Director, St. Luke's Hospital, 705 Cooper Street, Saginaw, Michigan.

NURSE ANESTHETIST: For 117 bed fully approved hospital located in the Shenandoah Valley. Desire third anesthetist to improve working conditions. We also have an Anesthesiologist. Minimum salary $450 per month with allowance for experience. Reply: Administrator, King's Daughters' Hospital, Staunton. Virginia.

WANTED: One Nurse Anesthetist to complete staff of 3. New 100 bed general hospital located 30 miles east of Raleigh and 100 miles from the coast. Complete maintenance in new nurses' home. Salary open. Apply Administrator, Johnston Memorial Hospital, Smithfield, North Carolina.

WANTED: Nurse Anesthetist. 225 bed hospital. One month's vacation; two weeks' sick leave; call time; may live in. Salary open. Apply: Mr. D. L. Price, Administrator, The Children's Memorial Hospital, 707 Fullerton Avenue, Chicago 14, Illinois.

WANTED: Two Nurse Anesthetists. 250 bed hospital. Department supervised by MD. Emergency call alternated every fourth day. Starting salary $450 per month. Apply: St. Francis Hospital, Monroe, Louisiana.

WANTED: Registered Nurse Anesthetist. Salary open. 60 bed hospital expanding to 76 bed. Riverview Memorial Hospital, 225 Prescott Street, St. Paul, Minnesota.

POSITION WANTED: Male nurse anesthetist. AANA member. Desires position in Colorado. Write: Irving L. Beattie, P. O. Box 155, Little Falls, Minnesota.

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NURSE ANESTHETIST: New 35 bed hospital. Starting salary $475 per month. Three meals and laundry of uniforms. Extra when on call. All benefits including pension. Good living and working conditions. Apply: Administratrix, Lyon Health Center, Yerington, Nevada.

ANESTHETIST: Urgently needed. 400 bed modern hospital. Active surgical and obstetrical services. New obstetrical department. New surgery to be started this fall. Salary dependent on training and experience. Social Security. Low-cost Life Insurance. Annual vacation and sick leave after one year's service. No night work except weekend on call. PM call approximately once a week. Medical anesthesiologist in charge. Apply: Methodist Hospital, Peoria, Ill.

WANTED: Registered Nurse Anesthetist for 90 bed general hospital situated in beautiful vacation country. Call every third night and every third weekend. Time off for call duty. Salary starts at $400 plus fees for emergency work. Write: R. von Krohn, Administrator, Josephine General Hospital, Grants Pass, Oregon.

NURSE ANESTHETIST: For 400 bed Joint Commission Accredited hospital. Salary $425.00 per month and meals. 40 hour week. Many employee benefits. Apply: Dr. R. Weyl, Anesthesiologist, Mount Sinai Hospital, Chicago 8, Illinois.

The 24th Qualifying Examination for membership in the AANA will be conducted on November 10, 1956. The deadline for accepting completed applications including the transcripts is October 1. Notice of eligibility will be mailed about October 10.

AANA APPROVED RETIREMENT PLAN

This is the Retirement Plan adopted by the Board of Directors at Atlantic City, April, 1955. It is available only to members of the AANA.

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OF THE

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